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CLIL Teaching Materials and Text Modification

Views and approaches of Finnish teachers in lower secondary school

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ABSTRACT

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<p>Tiivistelmä – Referat – Abstract</p> <p>The concept of Content and Language Integrated Learning (CLIL) has been rapidly adopted in Finland and received with positivity. Having high quality CLIL materials is seen as one of the most essential components of a successful CLIL programme. However, the challenges of producing materials for teaching through a foreign language have widely been acknowledged and have remained for at least three decades. Finland is, in fact, behind many other European countries in terms of CLIL materials production.</p> <p>This study sets three main objectives to address the research gap in CLIL materials design. The first objective is to find out the types of materials teachers use in lower secondary CLIL classrooms in Finland. The second and third objectives are to identify and to evaluate teachers' approaches to text modification. The study focuses on five secondary teachers who teach non-language subjects to grades 7-9 in English. The qualitative data consist of thematic interviews and teaching materials designed by the participants. A thorough review of over 60 studies is conducted in order to provide a theoretical framework for the evaluation of input modification strategies.</p> <p>The results show that the participants commonly employ these four types of materials: 1) textbooks in Finnish, 2) textbooks in the target language, 3) self-written materials, and 4) adaptations of authentic materials. In the case of adapting authentic materials, the study identified all three main approaches to text modification: simplification, elaboration and rediscursification. All participants used some types of rediscursification strategy. Regardless of their previous teaching experience, most participants use elaboration, though the choice of its substrategy is limited to adding redundancy by paraphrasing. More experienced teachers seem to avoid using simplification strategies whilst less experienced teachers adopt a wide range of strategies of simplification.</p> <p>This study can provide the professionals in the field of CLIL education (e.g. material writers, publishers) with an insight into the reality of how the materials are used by CLIL practitioners. The results may also contribute to CLIL teacher education and in-service training by informing teachers of the commonly used input modification strategies and raising awareness of the effectiveness of these techniques.</p>		
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1 INTRODUCTION

The idea of conducting my studies on Content and Language Integrated Learning (CLIL) materials design started back in 2014 when I began my career as a secondary school teacher, teaching English as an Additional Language (EAL) at a British curriculum/IB international school in China. English is used as a Medium of Instruction (EMI) to teach academic subjects in the school. For eight out of twenty hours per week, I was asked to teach Science (Biology, Chemistry and Physics) in the EAL classroom to a group of year seven students who were withdrawn from the mainstream science classes due to low levels of proficiency in English. At the time, I held a Bachelor's degree in English Studies for Teaching and my previous classroom experience was mostly in teaching English as foreign language. Hence, I learned to teach CLIL classes on the job through trial and error.

During the three and a half years of direct CLIL teaching, I grew to enjoy the challenges and dynamics of teaching CLIL that demanded cooperating closely with subject teachers and making content accessible to learners. My enthusiasm motivated me to invest a huge amount of time in designing CLIL materials and the students' learning results were positive. I came to be interested in finding out how this could be done more efficiently and whether or not my approaches to materials adaptation could withstand theoretical scrutiny. After participating in an in-service training on Teaching ESL students in the mainstream classroom, the idea of this study was finally formulated.

This study is placed in the field of Applied Linguistics, thereby having language as a main focus. The area of interest is Content and Language Integrated Learning (CLIL). CLIL has been defined as a European approach in which a language is different from the home language is adopted as the medium of instruction for non-language subjects (Juan-Garau and Salazar-Noguera 2015). The origins of CLIL can be found in bilingual approaches to education in Europe and around the world (Lasagabaster 2015). CLIL very quickly demonstrated the capacity to learn from them and in particular from the Canadian and US immersion programmes and Content Based Instruction (CBI) (Juan-Garau and Salazar-Noguera 2015). Coyle, Hood and Marsh (2010) summarized the core idea

of CLIL as an educational approach that has a dual focus on the learning and teaching of both content and language in an additional language.

The context of my study is bilingual education which offers programmes that teach content through an additional language, namely a second or a foreign language, other than the children's native language (Harmers and Blanc 2000). Bilingualism is also used as a shorthand form for cases of pluri- and multilingualism, but strictly speaking, bilingual means an individual who has a language competence in two languages (Butler 2013). Research shows a connection between plurilingualism and creativity which lies behind a higher capacity for problem solving and alternative ways of perceiving the world (European Commission 2009). Bilinguals also gain an advantageous position in global society because multilingual competence promotes cultural relevance in globalized, data-based technological societies (Chibaka 2018).

The social and educational structure of Finland is ideal for the studies on CLIL in bilingual education as Finland is a bilingual (Finnish/Swedish) European country that has a relatively long history in providing bilingual education. Bilingual schools in Finland that offer programmes taught in Finnish and English are gaining increasing popularity due to the status of English as a Lingua Franca (ELF). In a recent study by Salo, Kankaaranta, Vähänhyypä and Viik-Kajander (2011, cited in Bovellan 2014), increasing teaching through English has been suggested as one of the ways of supporting internationalisation in Finland.

My research soon led me to find Bovellan's (2014) doctoral dissertation conducted in Finland: 'Teachers' Beliefs About Learning and Language as Reflected in Their Views of Teaching Materials for Content and Language Integrated Learning (CLIL)'. Despite having taught in two countries six thousand kilometers apart, Bovellan and I had rather similar experience in getting into CLIL teaching and the same struggles in producing materials. The only difference is that she had been teaching primary education whilst I have taught and plan to continue to teach in secondary education. Her research paved the way for carrying out my research particularly in terms of mapping out the literature review and research method.

In her study, Bovellan (2014) identified two major research gaps in the field of CLIL: one is the investigation of CLIL teachers' beliefs to find out more about CLIL implementation (Nikula and Dalton-Puffer 2014) and the other is the search of suitable teaching materials (e.g., Alonso Grisaleña and Campo 2008, Gierlinger 2007b, Lucietto 2008). She then combines the two gaps into one, namely, CLIL teaching materials from teachers' perspective and how this reflect the teachers' beliefs of learning and language. There is an urgent need for research on teaching materials in CLIL and particularly the teachers' role in producing them (e.g., Wyatt 2011, Mäkiranta 2014).

My study will follow the footsteps of Bovellan's study in presenting insights into lower secondary teachers' experience in designing teaching materials for CLIL. Based on Bovellan's application of Lorenzo's input modification model, my research will widen and deepen the scope the survey of previous studies on the effect of input modification for the purpose of evaluating teachers' approaches to text modification.

The research questions of this study, thus, can be framed as follows:

1. What are the Finnish secondary CLIL teachers' views of teaching materials and the role of National Core Curriculum (NCC)?
2. What are the teachers' approaches to text modification?
3. What pedagogical implications can be revealed using the results from a survey of the empirical studies on input modification?

This study is structured in the following way: the second chapter defines CLIL, summarizes the development of CLIL research, and places CLIL in the context of Finnish education. The third chapter discusses the key issues related to CLIL materials design. Chapter four presents Lorenzo's model of input modification techniques and a survey of previous research on the effects of input modification. The literature review will be followed by materials and methods in chapter five. In the sixth chapter, the results will be introduced and discussed in two parts with the first part addressing the first research question on teachers' accounts of curriculum and teaching material , the second part referring to the second and third research questions on approaches to text modification. The last

chapter will summarize the key points from the results and discussion, assess the limitations of this study and offer recommendation for further research.

2 CONTENT AND LANGUAGE INTEGRATED LEARNING

2.1 Defining CLIL

To have a better understanding of what CLIL is, it is useful to position CLIL in the context of bilingual education and distinguish CLIL from its antecedent approaches: immersion and content-based instruction (CBI, an alternative term is content-based language teaching CBLT). This figure constructed by Bovellan (2014) helps to clarify these three educational approaches:

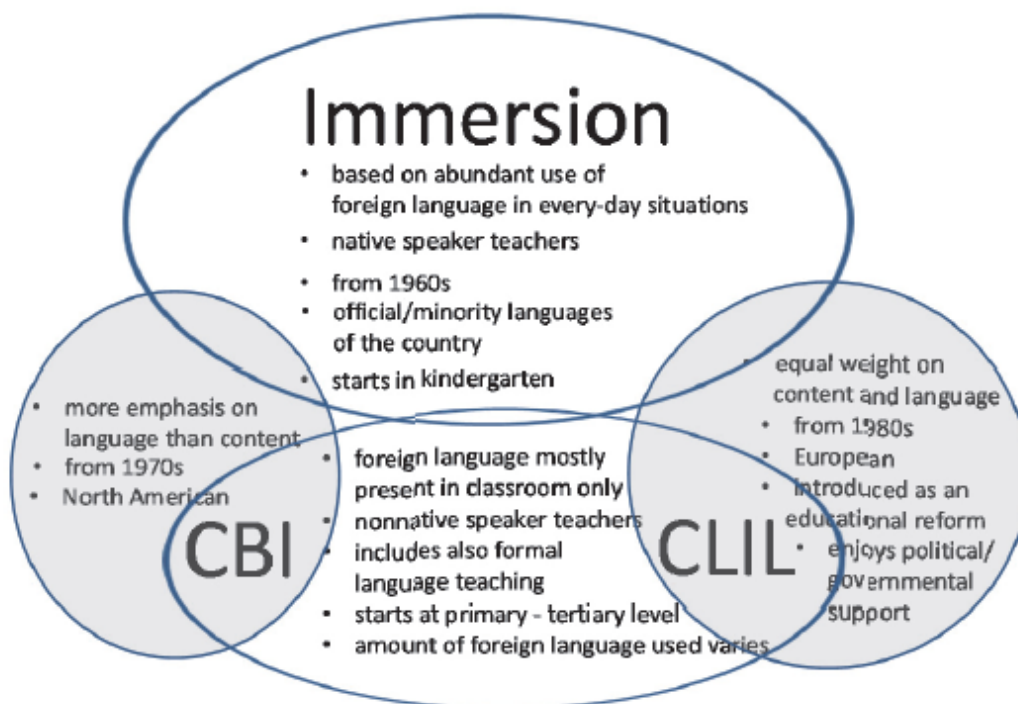


Figure 1 Immersion, CBI and CLIL

Developed back in Canada in the 1960s, immersion lays the foundation for CBI (1970s) and CLIL (1980s), so they both share the features of immersion in terms of abundant use of foreign language although only in the classroom instead of in everyday situations. CBI and CLIL have

many similarities such as the use of non-native language teachers and formal language teaching but also have a few characteristics unique to themselves e.g. CBI places more emphasis on language than content whilst content and language bear equal weight in CLIL.

As pointed out by Coyle (2005), defining the nature CLIL is a lifelong effort as it encompasses all sectors of education from primary to tertiary, from a few hours a week to intensive learning for years. To gain a clearer picture of the structure of CLIL programmes this study aims to investigate, it is useful to take a look at Dalton-Puffer's (2011) six-point list of the characteristics of CLIL programmes in Europe, South America, and many parts of Asia:

- (1) CLIL is about using a foreign language or a Lingua Franca, not a second language.
- (2) The dominant CLIL language is English, since it is increasingly regarded as a key literacy feature.
- (3) CLIL teachers are normally non-native speakers (NNS) of the target language.
- (4) CLIL lessons are usually content lessons, while the target language continues as a separate subject.
- (5) Less than 50% of the curriculum is taught in the target language.
- (6) CLIL is usually implemented once learners have already acquired literacy skills in their first language.

It is also essential to clarify where the current study stands on the core issue of content and language balance in a CLIL programme. Until recently, the emphasis of teaching in CLIL has primarily been on content whilst language is seen as the vehicle to teach content. Learners study content and acquire language without deliberate learning of the language itself (Coyle, Hood and Marsh 2010, Llinares, Morton and Whittaker 2012 and Cammarata and Tedick 2012). Content specialists, and not language teachers, are responsible for teaching which may contribute to the intentional learning of content and incidental learning of language.

Recent research on teaching through a foreign language emphasises the importance of intentional learning of language and makes a claim for equal status of foreign language and content

as educational objectives. Ylönen (2001, cited in Bovellan 2014) argues, convincingly, that the linguistic form and content, or the way of speaking and the way of thinking in scientific context, are interconnected. The current study supports the view of placing equal importance on the learning of content and language, meaning that CLIL programmes should have dual learning objectives, where the language learning objective functions primarily to improve learners' access to content and thereby supports the achievement of the content learning objective.

2.2 CLIL Research

The main focus of CLIL research during the 1990s and the beginning of 2000s was on understanding the phenomenon by looking at the implementation and providing macro-level information. More recent research is dealing with topics concerning the language learning outcomes of CLIL programmes. The studies in the Netherlands (Admiraal, Westhoff and de Bot. 2006) and Spain (Lasagabaster 2008) showed improved language proficiency and skills are used to deal with cognitively complex tasks.

Other studies delved into classroom interaction (e.g., Dalton-Puffer 2007, 2009, Evnitskaya and Morton 2011, Nikula, Dalton Puffer and García 2013), CLIL students' vocabulary acquisition (e.g., Sylvén 2010), cultural diversity (e.g., Carrió-Pastor 2009), the effects of CLIL on mother tongue development (e.g., Cañado 2018), and CLIL teacher expertise (e.g., Hartiala 2000, Moate 2011 and Banegas 2012).

The following topics have been explored regarding CLIL teaching materials: materials used in certain subjects (e.g., Lorenzo 2013), the nature of tasks in CLIL (Vollmer 2008), making texts accessible to learners at different levels (Montet & Morgan 2001), CLIL teachers' methodology with materials (Gierlinger 2007b), adapting authentic materials for CLIL (Moore and Lorenzo 2007), the material design process of CLIL teachers (Mäkiranta 2014), and teachers' beliefs and their influence on materials design (Bovellan 2014) .

CLIL research in the 1990s and 2000s has largely showed positive results with evidence showing that it equips students with strong L1 and L2 competence, more vocabulary, and more fluent communicative skills. In addition, CLIL has been found to support learning on the whole (Admiraal, Westhoff and de Bot. 2006, van de Craen et al. 2007, Dalton-Puffer 2007, 2009, Lasagabaster 2008, Merisuo-Storm 2002, Sylvén 2006). Criticism of CLIL, however, has increased in recent years and there are two main arguments. The first is related to the accessibility of the content; it is claimed that the understanding of content is compromised because of language problems which can be caused by students' own limited linguistic resources, teachers' language competence and the artificiality of the interaction between a teacher and pupils sharing the same mother tongue (Doiz and Lasagabaster 2017). The second criticism is related to the elitist label that is often attached to the CLIL programmes. This will be discussed further in the context of Finnish education in section 2.3.

Dalton-Puffer, Nikula and Smit (2010) suggest that, on a macro level of the field, future research should support further development of CLIL as an educational approach and continue to uncover the possibilities of CLIL. The current study addresses some of the gaps in research by investigating CLIL teaching materials from teachers' perspectives in lower secondary schools in Finland as well as teachers' approaches to text modification.

2.3 CLIL in Finnish educational context

This section will briefly discuss reasons why CLIL has been rapidly adopted in Finland and generally received with positivity. Some of the methodological roots of CLIL will also be mentioned together with the legislation on teaching through a foreign language in Finland.

Finland has two official languages: Finnish and Swedish, and it also recognises a number of minority languages such as Sami languages. Multilingualism is visible everywhere in Finland. For example, in restaurants the menus are bilingual and in schools it is compulsory to study both official languages. English is another main language that Finnish people are exposed to, mostly through the

various types of media. With the implementation of the new NCC in 2016, Finnish schools are starting to offer English as a foreign language from grade one instead of grade three. Moreover, Finnish is only spoken by approximately five million people, so there is a true need for learning foreign languages in order to be able to communicate beyond the Finnish borders.

One of the key principles guiding education in Finland is social equality. Finnish schools do not generally select their pupils, but every child is guaranteed a school place in the neighbourhood (although there are special arrangements for children with Special Education Needs). Basic education is free of charge for everyone and local authorities are responsible for organising education and fulfilling the objectives of education. Schools can write their own curricula based on the NCC for Basic Education and the municipal document, meeting the conditions and requirements set by the Basic Education Act (628/1998). This also applies to bilingual schools and the goals of the National Core Curriculum for Basic Education must be achieved in all subjects (FNBE 2014). However, research shows concerns about the increasing inequality of education in Finland. In Finland at present, systems for choosing a preferred school are well established especially in urban areas (Seppänen 2006, cited in Bovellan 2014). CLIL, with its entrance exam and high selectivity rates, therefore may to some degree threaten the education system based on equality although concerns specifically about CLIL have not been put forward. This may be because, as suspected by Rajander (2010), equality has in part been compromised by the need to accommodate diversity and respond to the specific learning needs of gifted pupils.

Although CLIL has existed for a relatively long time in Finland, the practices of CLIL are still remarkably varied between individual schools and no established CLIL model exists (Nikula and Järvinen 2013, cited in Bovellan 2014). This is characteristic of CLIL programmes in most other European countries as well. The decentralised decision making in education in Finland further encourages the diversity in CLIL practices. The only regulation set by legislation for CLIL in Finland is the qualification of a CLIL teacher. The details of the requirement can be found in section 5.2.1.

According to the national survey of CLIL carried out in 2005, the number of schools offering CLIL reported in 2005 was 106, with 3.6% at the primary level and 9% at the lower secondary level. In her doctoral thesis, Bovellan has studied extensively teachers' beliefs about learning and language by observing their views on teaching materials for CLIL. The current study will follow her path and conduct a similar study on lower secondary school CLIL teachers although my study will focus on teachers' experience with teaching materials and an evaluation of teachers' text modification strategies. Some factors that might cause differences between CLIL materials design for primary school learners and secondary school learners include pupils' ages, prior knowledge and experience in the target language and the structure of teaching. A class teacher system is replaced with a subject teacher system in secondary school, which means that each subject is taught by a different teacher and studied much more independently. In this case, the integration of systematic language development between different subjects cannot be achieved without, for instance, fostering a collaborative working environment.

3 TEACHING MATERIALS FOR CLIL

3.1 CLIL Materials

Teaching materials can cover almost everything from books and worksheets to webpages and realia. The focus in this study is primarily on teachers' accounts of textual materials, including textbooks, exercise books, materials designed by teachers and other printed materials. Teaching materials and textbooks are often characterized along the same lines due to the tradition of textbooks as the major teaching and learning material. Teaching materials and learning materials shall be considered as synonymous in this text. They include all previously mentioned types of textual materials for the purpose of teaching and learning.

Having high quality CLIL materials is seen as one of the most essential components of a successful CLIL programme (de Graaff, Koopman and Westhoff 2007, Marsh 2002, Mehisto 2008).

However, the challenge of producing materials for teaching through a foreign language has widely been acknowledged and has remained for at least three decades. Finland is, in fact, behind many other European countries in terms of systematic CLIL materials production. This challenge is caused by the requirement to integrate two learning aims: content learning outcomes and foreign language development (Morton 2013). The lack of teaching materials in CLIL have caused a huge increase in teachers' workload (Bonnet 2012) and difficulties in ensuring the coverage of the contents of the national curriculum (Gierlinger 2007a).

Morton's study (2013) identified four types of materials that are most commonly used by CLIL teachers from four European countries including Finland: textbooks intended for native speakers (NS), CLIL textbooks, adapted authentic materials and self-written materials.

Adopting materials from the target language speaking countries is found to be challenging. Tan (2011) points out that learning to read in the discourse of science requires interaction with people, texts, technologies, knowledge and assumptions about the world. Many scientific texts are written for a highly literate audience, making them inaccessible for those who do not have the necessary skills. Textbooks of science subjects are also found to be cognitively and linguistically challenging even for learners who studies in their L1 (Maxwell-Reid and Lau 2016). In a study conducted in two Finnish secondary schools, the level of language used in textbooks intended for NS are found to be too difficult for L2 learners (Pihko 2010, cited in Bovellan). In Germany, difficulties with accessing textual materials and the learning of vocabulary were reported to be among the reasons for dropping out of CLIL programmes (Apsel 2012).

Nevertheless, compared to students learning in their mother tongue, L2 learners tend to be more dependent on teaching materials, usually on textbooks due to their stable nature and flexibility in the case of revision (Elomaa 2009, cited in Bovellan 2014).

Adapting materials from the target language speaking countries also poses various problems such as different curricula between countries and contents specific to the local context. Tapscott (2009) compares the US curriculum with the Finnish curriculum and points out the distinct

difference in terms of the provision of guidance on implementation. The Finnish curriculum serves as a guideline for teachers to cover contents whereas teaching methods, materials and other factors of classroom arrangements are left for teachers to decide on. Views of learning and language can also differ in different countries although they are often implicit and difficult to perceive. These differences can benefit teachers with regard to learning to teach the content from different perspectives, although they also mean that materials designed for another country are not readily transferable.

Plenty of studies support self-made materials in any education setting in terms of advancing learners' textual skills such as new media skills and providing variation for teaching methods (e.g. Bull 2013, Holguín 2014). Morton's (2013) study indicated that more than 90 percent of teachers preferred preparing materials from scratch and almost 90 percent modified authentic materials to make them more suitable for their target learners. In contrast, only 20 percent of the teachers used textbooks intended for native English speaker learners. Rapatti's (2009, cited in Bovellan) study of pupils with immigrant backgrounds studying History in Finnish showed that elaborated history texts were considerably more accessible for them and they were able to read and discuss them enthusiastically.

McGrath (2008) mentioned that definitions of adaptation can be very broad. For Madsen and Bowen (1978, cited in McGrath 2008), adaptations can refer to supplementing, editing, expanding, personalising, simplifying, modernizing or localising. Whilst for Tomlinson (1998), it can be defined as the process of reducing, adding, omitting and modifying. Simensen's definition is abridging, retelling and rewriting. Brinton, Snow and Westche's (2003:93) description of adaptation in the language class corresponds more closely to the current study: "individualising materials to more closely correspond to the needs and types of students".

Bovellan (2014) highlights that the gap in research on teachers' adaptation strategies is worrying, given that CLIL and non-CLIL teachers of all subjects working at all levels adapt materials

systematically or intuitively every day. Therefore, the present study aims to address this gap by investigating and evaluating CLIL teachers' approaches to text modification.

3.2 CLIL materials design from a language perspective

As is mentioned above, the biggest challenge of CLIL materials for both the teacher and learner lies in the fact that materials have to meet both the linguistic and cognitive needs of the target learners. This is, of course, a challenge for all teaching and learning aims, but it is more pronounced in CLIL as the educational activities are carried out through a foreign language. This dual demand of CLIL has resulted in the need to write or adapt materials.

According to Morton (2013), CLIL materials cannot meet the linguistic or cognitive needs of CLIL learners when materials are not adjusted or produced from scratch. De Graaff, Koopman and Westhoff (2007) support this argument by approaching CLIL materials design from a language perspective. They introduce five basic procedures related to positive teaching outcomes in CLIL. The practices that are useful to the current study are the ones that specifically focus on the use of text: text selection in advance, text adaptation in advance and text adaptation during teaching.

There are sufficient theoretical frameworks for producing effective materials for teaching through a foreign language, but few teaching materials in reality are found to sit squarely in the centre of the language and content continuum (Stoller 2004). Whilst CLIL teachers often claim to prioritise content over language in their teaching (Bovellan 2014), materials tend to give priority to language over content in the CBI context (Snow 1993). Banegas's (2012) study on CLIL teachers' views of language may shed some light on the reason behind CLIL teachers' claims. His study illustrates that CLIL teachers deem that they failed to integrate language into content learning because the activities they designed were content oriented and they did not provide vocabulary or grammar practice. Bovellan (2014) argues convincingly that this indicates CLIL teachers tend to hold a formal view of language (language as a set of words arranged by syntax) instead of a function view of language (language as a vehicle for expressing meaning).

To facilitate language development of the learners, it is much more complicated than simply practicing vocabulary and grammar. This requires teacher's linguistic awareness which allows them to judge readability levels of different texts in order to select and adapt materials at an appropriate level for their learners (Barbero 2007). Language should be introduced to learners in such a way that they can realise that learning these patterns of language will give them access to the literacy of the subject (Kumaravadivelu 2006). Moreover, Schleppegrell and O'Hallaron (2011) point out that content teachers need to have the skills to recognise the language demands of the genres of their subject and analyse the linguistic features of the texts. They should also be able to develop pupils' metalanguage skills which allow them to discuss language features with their pupils.

This section finishes with presenting the discussion on the use of L1 in CLIL materials. This is a topic that rarely receives attention in CLIL research. The general opinion on the use of L1 is somewhat reserved if not pessimistic although a few researchers are supportive of the use of it in certain materials. It is suggested that at lower levels the teacher can use L1 as input and encourage pupils to use the target language to share information and present an end product. Alternatively, they can provide input in the target language and then give pupils the option to use L1 to share and present (Pan and Pan 2010). Coelho (1998), on the other hand, support the use of bilingual materials. In such cases, learning materials in both languages would be useful, but if not available, the minimum requirement would be providing learners with bilingual glossaries to ensure learning the concepts in both languages.

4 TEXT MODIFICATION

Researchers have classified adaptations in CLIL materials in different ways (e.g. Borzova 2008, Gierlinger 2007, Lorenzo 2008). In her study, Bovellan (2014) demonstrated the applicability of Lorenzo's model (2008), thereby the present study will follow the same method in terms of categorizing respondents' approaches to adaptation. Lorenzo's (2008) model is based on Moore

and Lorenzo's (2007) study on CLIL teachers' adjustments of authentic texts for CLIL classroom in which they identified three distinct approaches to adaptation: simplification, elaboration and rediscursification. For the current study, Lorenzo's model also serves as a map for surveying the studies on the effectiveness of each approach.

4.1. Simplification

Simplification is considered the most basic input modification strategy which requires the text adapter to lower the level of linguistic complexity. Research reviewed in SLA found simplification to be similar to natural adaptation processes such as interlanguage talk, motherese and caretaker talk (see Ellis 1994, Gass 2003, Gass and Selinker 2004). Examples of the typical strategies are: reducing mean length index, i.e. number of words per sentence; text with a low type-token ratio; and restricting the range of vocabulary. (See Appendix 1 for a more comprehensive list of strategies).

4.2 Elaboration

The aim of elaboration is to reduce the cognitive complexity without major modifications of the original linguistic texture. The guiding principle is to make meaning clear without reducing the linguistic complexity of the text. Common strategies used are paraphrasing, repetition and apposition, which add information to help contextualize the difficult parts. Therefore, the elaborated texts tend to be longer, have more words per sentence, and have more nodes than the original (Chaudron 1983, Yano, Long and Ross 1994). (See Appendix 1 for a more comprehensive list of strategies).

4.3 Rediscursification

Lorenzo introduces rediscursification as the third means of adaptation. Although the process still modifies sentences and texts, rediscursification operates at a much higher level with changes arising

from a discursive interpretation of the situation where the text will be read. Adaptors tend to be bolder with adjustments with the intention to reappropriate the text as a means for the social construction of a learning experience (Christie 2002, Halliday and Hasan 1989, cited in Lorenzo 2008). As a result, modifications can incur the altering of the meaning and the discourse type.

Lorenzo further defines four main strategies of rediscursification: change of text typology, more overt interactional structure, explicit engagement devices, meaning adaptation and format adaptation. (See Appendix 1 for a more comprehensive list of strategies).

4.4 A survey of previous research on the effects of input modification

The third research question of this study is to evaluate the pedagogical implications of the approaches to text modifications adopted by secondary CLIL teachers. Over the span of the past three decades, a number of studies have examined the effects of different types of text modifications on L2 comprehension (for review, see Parker and Chaudron 1987, Yano, Long and Ross 1994, Oh 2001, and Chung 1995).

In this field of research, three recurring themes were found, that is, reading comprehension, authenticity, and vocabulary (See appendix 2 for a table of the studies reviewed for this study). In the following subsections, I will summarise the results of previous studies on simplification and elaboration within the frames of the three recurring themes.

Rediscursification was identified only in the last decade by Moore and Lorenzo and its effects on comprehension and learning are still yet to receive the attention of empirical research. In addition to the studies conducted by Moore and Lorenzo (2007) and Lorenzo (2008), the discussion will be drawn from a closer reading into Bhatia's (1983) work cited by Moore and Lorenzo (2007) as well as Guerrini's (2009) study which examines the adaptation strategies identified in Spanish CLIL materials.

4.4.1 Reading comprehension

The studies investigating the impact of simplification on reading comprehension are not consistent and occasionally contradictory. By measuring ability to answer questions, retain information over time and recall important aspects of content, early research showed that simplification does not improve comprehension (Chalke 1985, Klare 1963, cited in Rix, 2009). Other studies even suggest that simplification at the different levels of a text (lexicon, syntax, lexicon-syntax) may actually lower the readability of the resulting text (e.g. Blau 1982, Young 1999, Crossley et al. 2007, Ellis 1993 and Oh 2001).

On the other hand, about the same number of studies demonstrated that text simplification can aid L2 reading comprehension (Crossley et al. 2007, Crossley, Yang and McNamara 2014, Leow 1997, Yano, Long and Ross 1994, and George 1993 etc.). The effect, however, may not be significant (Young 1999) and the improvement seems to only occur when the text content is unfamiliar to the student readers (Keshavarz, Atai and Ahmadi 2007).

The nature of the interplay between reading comprehension, language proficiency and simplification has also been contested. Studies revealed that language proficiency had a significant effect on both reading comprehension and recall whereas linguistic simplification showed no significant effect (Floyd and Carrell 1987, cited in Keshavarz, Atai and Ahmadi 2007). Moreover, Crossley, Yang and McNamara (2014) found that simplification can benefit lower language ability learners whilst, despite using similar research methods, the results of Oh's (2001) study showed that it is the higher proficiency learners that benefit more from simplification.

The existing evidence of the effect of simplification on reading comprehension from the perspectives of students and teachers, however, shows more consistent and encouraging results. Ali (2017) reported that simplification has a positive perceived effect on students' comprehension. It is also found that simplification has a beneficial impact on students' results in an exam situation (Abedi, Lord and Plummer 1997). Teachers have expressed their belief in enhancing comprehension and access to the curriculum by using simplified language materials (Rix 2009)

although it is argued that simplified material should be used with caution as it may lead students to develop inappropriate reading strategies (Honeyfield 1977, Lotherington-Woloszyn 1993).

In contrast, research findings on the correlations between elaborative input and reading comprehension are much more consistently positive (Cervantes 1983, Kelch 1985, Chaudron and Richards 1986, Fujimoto et al. 1986, Brown 1987, Tsang 1987, Blau 1990, reviewed by Yano, Long and Ross 1994). Interestingly, Yano, Long and Ross concluded that even though elaborated texts increase the general processing burden due to text length and complexity, they were, simultaneously, cognitively simpler than the unmodified texts because of the processing support provided to readers.

Oh's (2001) comparative study on the effect of simplified and elaborated texts on South Korean high school students' EFL reading comprehension shows that elaboration is at least as equally successful as simplification in improving comprehension when compared with unmodified text versions. Oh's findings also indicate that the overall comprehension of the passages significantly improved for both high and low language proficiency readers.

Kim and Van Dusen's (1998) study investigated the role of prior knowledge and elaboration in text comprehension. The educational implications from the findings of this study are that if the learner has a high level of prior knowledge, the information presenter does not need to provide elaborations of the main points because the learners may self generate based on their prior knowledge and vice versa for learners who have low levels of prior knowledge.

Lastly, Yano, Long and Ross's (1994) study provided considerable, though not conclusive, evidence in support of the view that elaborated texts can provide opportunities for learners to develop effective learning strategies, such as the ability to process texts at a deeper level.

4.4.2 Authenticity

The studies on simplification agree unanimously that it results in distorting the authenticity value of texts (Widdowson 1978, Davies 1984, cited in Keshavarz, Atai and Ahmadi 2007) and hindering

learners' exposure to natural language (Honeyfield 1977, Long and Ross 1993, Yano, Long and Ross 1994 and Oh 2001), which might lead to learners creating misconceptions about language (Goodman and Freeman, 1993). Crossley et al.'s (2007) linguistic analysis of simplified and authentic texts explains the kinds of linguistic features that makes simplified text unnatural. For instance, they found that simplified texts provide ESL learners with more coreferential cohesion and more common connectives and rely more on frequent and familiar words than do authentic texts.

Elaboration is seen as a compromise between those who advocate the exclusive use of authentic reading materials and those who suggest that pedagogically modified texts are more appropriate (O'Donnell 2009). Both Oh's (2001) and Yano, Long and Ross's (1994) studies support the suggestions that input should be modified in the direction of elaboration because it exposes learners to rich linguistic forms.

4.4.3 Vocabulary

The results of studies investigating the effect of simplification on vocabulary learning are inconclusive. For instance, Shirinzarii and Mardani (2011, cited in Negari and Rouhi 2012) found that students who read simplified and baseline texts performed better in the test that assesses incidental vocabulary learning than those who read elaborated texts. In contrast, Urano's (2000) and Negari and Rouhi's (2012) studies concluded that lexical simplification did not trigger incidental vocabulary acquisition at all. The findings of Abbasian and Mohammadi's (2016) study go on to reveal that not only do input modification procedures significantly affect vocabulary development but also that the elaboration group outperformed the simplification group.

Some issues pointed out by Chung (1995) still remain such as the relationship between types of modification and vocabulary acquisition. It is also still hard to determine whether certain types of modification are more effective for L2 vocabulary acquisition than other types. However, some advances have been made as the findings of research carried out on the effect of lexical elaboration on L2 vocabulary acquisition have been fairly consistent.

The results of the studies indicated that elaborating target lexical items can trigger meaning recognition of those elaborated words, but do not assist form recognition of those words (Urano 2000, Kim 2006, Moradian and Adel 2001, and Marefat and Moradian 2008). Some studies (Silva 2000, cited in Kim 2006, Marefat and Moradian 2008 and Moradian and Abel 2011) further showed that explicit elaboration was more effective in L2 vocabulary acquisition than implicit lexical elaboration. Although implicit lexical elaboration was found to have a positive effect on the recognition of word meanings from reading but only when typographical enhancement was present (Kim 2006).

In summary, from the review of the literature on the effects of input modification, it can be claimed, elaboration devices seems to enhance L2 comprehension and vocabulary development. The same cannot be as confidently stated about the effect of simplification on either comprehension or vocabulary development. Besides, language proficiency, familiarity of the context and learners' prior knowledge are three major factors that interact with L2 comprehension. Both the processes of simplification and elaboration of input distort the naturalness of the language, but the latter seems to preserve the richness without adding cognitive load and, therefore, it is considered to be more pedagogically recommendable.

5 MATERIALS AND METHODS

5.1 Aims and research questions

One objective of this study is to gain first-hand knowledge of the Finnish lower secondary CLIL teachers' experience with different types of teaching materials. The second objective is to look at the teachers' approaches to text modification. The third goal of the study is to create a theoretical framework based on empirical evidence that can be used to evaluate the teachers' use of input modification strategies.

To reiterate, the research questions of this study are as follows:

1. What are the Finnish secondary CLIL teachers' views of teaching materials and the role of National Core Curriculum (NCC)?
2. What are the teachers' approaches to materials adaptation?
3. What pedagogical implications can be revealed by a survey of the empirical studies on input modification?

In answering these research questions, this study hopes to provide the professionals in the field of CLIL education (e.g. practitioners, material writers, publishers) with an insight into the reality of how the materials are used in the target context. The study also aims to contribute to CLIL teacher education and in-service training by informing teachers of the commonly used input modification strategies and raising awareness of the effectiveness of these techniques.

5.2 Data collection and research process

5.2.1 Respondents

The participants of the study consist of five secondary school teachers who teach content subjects to grades seven to nine (pupils' age 13-16) in English. The teachers come from two schools from Southern Finland. School A is a bilingual school where students can choose up to 50% of their courses in English and the rest in Finnish whilst school B is a comprehensive school offering an international stream in which all subjects are taught in English except for Finnish language. Both schools either require students to have received their previous education in English or take an entrance test if their competence in English cannot be otherwise proven.

The cultural makeup of the student population in school A is fairly homogeneous with two to three immigrant students in each class of 22-24 and most students have moved up from a bilingual primary school. In contrast, the student cohort in school B is considerably more multicultural with only a few Finnish students in each class. This diversity in student background has led to a wider range of differences in terms of their English proficiency. The language levels of the pupils in school A, on the other hand, are more even. Only around three or four pupils in each grade struggle

to access the content due to low language ability, this is usually connected with other learning difficulties.

The participants were recruited from a pool of ca. 80 Finnish CLIL teachers by emailing information of the study to all Finnish secondary schools in Helsinki and Espoo regions that offer to teach non-language subjects in English. The participants covered a range of subjects both in science and humanities reducing the possibility of representing subject-specific views. As was mentioned in section 2.3, CLIL lessons are usually delivered by NNS of the target language (Dalton-Puffer 2011). Hence, NS teachers were not approached, thereby allowing the characteristics and challenges related to designing materials in one's foreign language to emerge.

The respondents are in the age range of 27-60, and they make up a rather homogeneous group with regard to their ethnic and educational backgrounds. All the teachers involved in the study speak Finnish as their mother tongue. Four teachers hold a master's level degree while two teachers have their PhDs in the field of their teaching subjects, as per national requirement all participants hold a teacher's qualification. It is also worth noting that, as is stipulated by a decree in Finland from 1999, teachers either need to complete 80 study credits of language philology studies in the target teaching language or pass a general language test on Level five (Finnish National Board of Education 2005).

Two out of five participants are familiar with CLIL as an approach to teach a subject through another language. One participant majored in English and learned the concept of CLIL as part of a university course which inspired her to take History and Civics as a minor. She had been teaching English for nine years, Civics for five and History for one year. Another completed an in-service CLIL training with the university of Jyväskylä and has been teaching her subject in English for 20 years. The diversity of the CLIL teachers' training background resembles that of many other countries in Europe (Koopman, Skeet and de Graaff, 2014). These differences between participants enable a comparison of materials adaptation between teachers with different levels of experience and CLIL training.

Teacher profile	nationality	subject	length of teaching	grade and type of class	teaching qualification	language of instruction	familiarity with the term CLIL
T1B&G	Finnish	Biology & Geography	5,5 yrs.	7-9th grade bilingual class	MA in Biology & Geography Teacher qualification	English and Finnish	not at all
T2B&G	Finnish	Biology & Geography	20 yrs.	7-9th grade international class	MA in Biology & Geography Teacher qualification CLIL teacher qualification	English and Finnish	received training and has been working as a CLIL practitioner for over 10 yrs.
T3H	Finnish	History	15 yrs.	7-8th grade bilingual class	Degree in History, Politics and Eastern European Studies, PhD in History, Teacher qualification	English and Finnish	not at all
T4H	Finnish	History & Civics & English	9 yrs. English 4-5 yrs. Civics 1 yrs. History	7-8th grade international class	MA in English with a minor in History and Civics Teacher qualification	English	Learned the concept in a university course. inspired her to take the minor
T5P&C	Finnish	Physics & Chemistry	5 yrs.	7-8th grade international class	MA in Maths and Chemistry PhD in Physical chemistry Teacher qualification	English and Finnish	not at all

Table 1 teacher participants' profile

This study, with its limited number of participants, faces challenges concerning the ethical issue of ensuring anonymity. In an attempt to resolve this dilemma, the participants will be addressed as T1B&G, T2B&G, T3H, T4H, and T5 P&C. The letters B&G, H, P&C indicates the respondent's teaching subject as can be seen in the teacher profile table above. Biology and Geography (B&G) are commonly taught by the same teacher in Finland, as is Physics and Chemistry (P&C). Additionally, because four out of five participants are female and gender plays no role in this study, all teachers will be referred to as 'she' in the forthcoming text.

5.2.2 Data collection

The data is comprised of interviews and a collection of sample teaching materials provided by the participants. These two instruments lend themselves naturally to an investigation of teachers' view on teaching materials and an examination of materials adaptation methods.

To make a connection on a professional level with the potential participants, I mentioned my background as an English teacher with two years experience in teaching CLIL science. This was thought to have helped in creating an interview atmosphere with features of informal talk between teacher colleagues (Avalos 2011). All interviews were carried out in the morning in their classrooms where teaching resources were easily accessible and the atmosphere was pleasant and relaxed. The teachers talked open-mindedly with few clear signs of reservation about difficult issues. I feel that they treated me as their professional peer with a shared understanding and an ability to empathise. I prepared a copy of researcher instructions to remind myself of my role in a research interview situation, that is, my perceived authority on the subject and my responsibility to direct the conversation towards the themes (Dörnyei 2007).

Pilot study:

It was considered essential to run a pilot interview in order to check the intelligibility, accuracy and time management of the interview questions ensuring that the researcher makes the best use of the agreed time to maximize the quality of the data (Dörnyei 2007). Additional benefits were found after the test as it proved to be a useful way to rehearse interview techniques and get valuable suggestions from the pilot study participant, especially considering my participant was a former teacher from one of the target schools. From the pilot run, I learned that the full sentences used in the prompt sheet made it quite difficult to keep the flow of the conversation as it takes a long time to process the content of the next question, distracting me from actively listening to the responses. This was largely due to a tendency to prepare the next question ahead of time in order to reduce the lapses. The use of signpost phrases instead of full sentences worked effectively in the actual interviews. In addition to increased fluidity, the fact that I needed to structure my questions in an interaction helped in keeping the conversation more natural and less scripted. In Appendix 3, the interview questions are presented in full sentences as it is thought to be more comprehensible for the readers.

Interview:

The interviews were semi-structured and thematic and they were conducted in a conversational, in-depth manner that this approach naturally encourages. The aim was to allow a degree of freedom and adaptability in getting information from the interviewee (Dörnyei 2007). The themes were designed in advance in order to ensure that the same general areas of information could be collected from each respondent (Dörnyei 2007). The questions were not asked exactly in the same form and order with all the interviewees but the structure of the interview was subtly directed towards the themes (see Appendix 3).

The interview had three main themes: 1) teacher background information, 2) curriculum and teaching materials and 3) materials adaptation. The first section worked as an ice breaker, not focusing on the main object of interest, i.e. teaching materials. The background information considered necessary for the present study include teaching experience, education background, familiarity with CLIL, current teaching context and teaching style. The second theme includes questions ranging from curriculum, topic selection & content coverage, and existing materials.

The questions pertaining to the third theme were about adaptation of materials. Participants were asked for demonstrations of the strategies they used to modify materials. Specific attention was also given to how they had taken into account students' varied language competence during the process of adaptation.

A total of six interviews were conducted with five participants. T1B&G gave two separate interviews for Biology and Geography whilst the rest gave just one each. Five of the interviews were kept to an estimated length of 50-55 minutes. After transcription and data analysis of the interview with T3H, a few adaptation methods were found worthy of a further discussion and the teacher kindly agreed to have a follow-up discussion that lasted 15 minutes. One participant was particularly enthusiastic about sharing her experience in CLIL and her resources. She demonstrated three units of materials for each grade in secondary; the length of the interview was 120 minutes in

total. The interviews were audio taped and transcribed in full. The transcriptions were then coded in line with the interview themes. Transcribing spoken speech into written text demands the researcher's interpretation, involving decisions about the level of detail of the transcript. In this study, it was considered unnecessary to transcribe the sounds of breathing, intonation, signs or volume.

Teaching materials:

In the first email teachers were given a very brief introduction to the study aim highlighting the focus on teaching materials and text adaptations. The interview briefing was sent to participants in advance with the aim to inform them of the question themes and sample materials they might use for demonstration. Two participants read the briefing and printed out a material pack for the interview. The pack was based on one unit of work including different types of materials such as reading handouts, worksheets, and a test paper. This material collection method was then recommended for the rest of the participants as well. Two teachers demonstrated using the resources bank on their work laptop and sent the files to my email. Another one had a collection of in-house materials stored in ring binders; she went through the folders with me whilst I took photos of the pages and collected spare copies.

The table below summarises the respondents and the materials they provided:

Teacher	materials collected
T1B&G	8th grade heart & blood unit teaching slides (English/Finnish version), unit information sheets (original in English/adapted article) 9th grade vocabulary list, autumn 2017 exam paper on reproduction
T1B&G	7th & 8th grade climate unit teaching slide (English) and the textbook page in Finnish where the slide was adapted from 7th & 8th grade climate unit worksheets (English/Finnish version) 7th & 8th grade climate unit reading article from McGraw-Hill Geography: the human and physical world 7th & 8th grade climate unit reading article from IGCSE Geography
T2B&G	7th grade plants unit book extracts, information sheets (diagrams, picture dictionary, teacher written), fieldtrip info. pack, lab work written and adapted from various sources 7th grade water environment unit information sheets, exercise sheets, lab work instructions written and adapted from various sources 8th grade heart and vessels unit information sheets, exercise sheets, lab work instructions written and adapted from various sources
T2B&G	7th grade planet earth unit: printed lesson PowerPoint slides 8th grade land forms unit: printed lesson PowerPoint slides
T3H	8th grade reading text on the Finnish Civil War (original/adapted article) 8th grade autumn 2016 exam paper on Finnish Civil War 8th grade the textbook chapter 'Gorbachev and the Fall of the Soviet Empire' from Cambridge IGCSE Modern World History (current textbook) 8th grade the textbook chapter 'Gorbachev and Reform' from Oxford History For GCSE The Modern World
T4H	7th grade unit vocabulary exercise 7th grade teaching slides 7th grade A French revolution information sheet adapted from https://www.ducksters.com/history/french_revolution/ 7th grade worksheet on the causes of the French Revolution 7th grade a reading article 'Aftermath of the Napoleonic Wars and the Congress of Vienna' from https://coshea.weebly.com/national-instability.html 7th grade Reading worksheet 'How Did France Change Under Napoleon' downloaded from www.SchoolHistory.co.uk 7th and 8th grade vocabulary list
T5P&C	8th grade information sheet on acids and alkalis and the 3 chapters from Finnish textbook where the sheet was adapted from 8th grade worksheets on acids and alkalis teacher written 8th grade laboratory worksheet teacher written 8th grade test exercise on acids and alkalis teacher written 8th grade test on ionic compounds teacher written

Table 2 A list of teaching materials collected

For the purpose of this study, the materials collected serve two major functions. The first is to support the narrative accounts of the respondents. Secondly, due to the time constraint of the interviews, teachers were directed to give a generic account of materials adaptation on all four types of materials and only delve into the 'nitty gritty' of the textual adaptation for one or two representative materials. The original and adapted materials available were collected for comparative analysis. This post-analysis was essential for the present study as adaptation strategies can be easily overlooked and or forgotten without comparing to the original sources. Some respondents made the materials as far back as ten years ago and have since made modifications each time they have used them according to the needs of the students.

5.3 Data analysis

Qualitative content analytical methods were used to analyse the data. This method of analysis allowed the contents and structure of the data to be condensed, analysed and interpreted with the help of different categorisations (Krippendorff 2004) allowing data to be described systematically

(Schreier 2012). This is usually done by classifying instances into categories with a coding frame. Guest, MacQueen and Namey (2012) define a code as a textual description of the semantic boundaries of a theme. The process of coding in this study referred to giving labels for teachers' responses e.g. attitude to the use of L1, supporting vocabulary learning etc.. This was considered the most convenient method of analysing the interview data as the questions asked in the interviews were designed with thematic boundaries. The purpose of coding was to organise the responses without restricting them within the frame of the preset questions in the semi-structured interview. By doing so, patterns of concerns that had not been considered beforehand were more likely to emerge. The intention was also to find a framework that would not limit the analysis of the two different types of data, interview and teaching materials, and allow opportunities for these data to interact and support each other.

In addition, qualitative content analysis was not simply about the organisation of the data. The purpose was to reduce the data in order to enable an interpretation of the findings from the perspectives of the research questions and, eventually, to present new insights and improved understanding.

When exploring the codes from the perspective of the first and second research questions, four themes turned out to be relevant: a) the NCC and its effect on CLIL teaching materials, b) materials selection, c) material adaptation, and d) content and language learning. The findings of the current study will be compared when appropriate to the corresponding section in Bovellan's (2014) study on Finnish primary school CLIL teachers' views on teaching materials.

The second part of the analysis based on the collection of teaching materials focused on the core interest of the investigation, namely, materials adaptation methods. The interview responses and teaching materials were cross-referenced in the analysis.

The materials that were included in this part of the analysis were made up of the key texts the participants chose to discuss their use of modification techniques in depth. For the purpose of comparison, the researcher also examined the unmodified texts supplied by teachers. The materials

that had no source materials were forgone. The study also did not include any of materials from T5P&C in the findings and discussion on materials adaptations as all her materials are self-written and the sources could not be tracked.

Teacher	materials used for the analysis of text modification methods
T1B&G	8th grade heart & blood unit teaching slides (English/Finnish version), unit information sheets (original in English/adapted article) 7th & 8th grade climate unit teaching slide (English) and the textbook page in Finnish where the slide was adapted from
T2B&G	7 th grade water environment unit information sheets
T3H	8th grade reading text on the Finnish Civil War (original/adapted article)
T4H	7th grade A French revolution information sheet adapted from https://www.ducksters.com/history/french_revolution/ 7th grade a reading article 'Aftermath of the Napoleonic Wars and the Congress of Vienna' from https://coshea.weebly.com/national-instability.html 7th grade Reading worksheet 'How Did France Change Under Napoleon' downloaded from www.SchoolHistory.co.uk

Table 3 a list of materials used for the the analysis of text modification methods

Following an initial identification of adaptation methods based on teachers' accounts and textual comparisons, the data were reorganised and analysed using Lorenzo's (2008) three processes to adaptation as was mentioned in chapter four. This study benefited from a creative advantage by utilizing different methods of organizing and describing the phenomenon at hand. In addition to organising the techniques by Lorenzo's model of input modification, three different ways to categorise these modification processes were thought to have the potentials to reveal valuable results: by individual teachers, by subjects, and by types of teaching materials. The categorisation by individual teachers that is referred to in the results and discussion chapter can be found in Appendix 4.

This study aims to go a step further to provide an evidence-based evaluation of teachers' text modification. An investigation into the previous research on input modification uncovered a plethora of empirical studies over the past three decades on simplification and elaboration. Similar studies have not yet been conducted on rediscursification, but some specific strategies such as changes in text typology and format adaptations within this process have been studied (e.g. Bhatia 1983, Guerrini 2009). A thorough survey of over 60 studies on the effects of approaches to input modification was conducted to help create a theoretical framework for evaluating text modification

strategies. The results of the studies on the effects of input modification in previous surveys were presented in chronological order (e.g. Chaudron 1983, Yano, Long and Ross, 1994, Oh 2001). To make the results functional as an evaluation tool, a categorisation by criteria was thought to be more suitable. Adding the results of the more recent studies, the categorisation revealed the following main evaluable criteria:

1. reading comprehension
 - a. language proficiency
 - b. context and prior knowledge
2. authenticity
3. vocabulary

6 RESULTS AND DISCUSSION

This chapter presents the results and the discussion of the results in two parts: 6.1 CLIL teaching materials and 6.2 approaches to text modification. The first part mainly addresses the first research question on the comprehensive school CLIL teachers' experience of using different types of teaching materials. Section 6.1 will be structured based on the recurring themes identified from coding the interview analysis, namely CLIL teachers' views of the NCC, textbooks in Finnish, textbooks designed in the target language, self-written materials, and adaptations of authentic materials.

The second part addresses the second and third research questions on the approaches to and an evaluation of text modification teachers used in CLIL material adaptation. As is mentioned in the method chapter, the results and discussion will be presented within the frame of the three types of input modification identified by Lorenzo (2008): simplification, elaboration and rediscursification.

6.1 CLIL Teaching Materials

6.1.1 CLIL teachers' view of the NCC

Secondary CLIL teacher participants all reported working closely with the Finnish NCC. They were unanimously positive about using it as a tool to support their work regarding it as a very important framework. This situation mirrors that of the primary school CLIL teachers and, according to Bovellan (2014), CLIL teachers need to be expert users of the document as they do not have high quality textbooks that include all the required content matters in the target language. Mainstream teachers in Finland, on the other hand, do not necessarily have to know the curriculum very well because they trust high quality textbooks to include all the required content matters (Atjonen 1993, cited in Bovellen 2014). Hence they regard the curriculum rather as a legislative and administrative document (Kosunen 2002 and Niemi 2004, cited in Bovellen 2014).

Participants' positivity toward the NCC seems to derive from comparing it with the curriculums of other target language countries. Two teachers pointed out its merits in comparison with national curriculums in the UK and US.

Observing grade 7th American science textbooks, T5P&C feels that the structure of the Finnish curriculum is more suitable for the stage of students' cognitive development:

(1)The subject of science is treated as a whole at the 7th grade when students are first introduced to 'an idea of science' combining biology, physics and chemistry on a theoretical level whereas these subjects are taught separately in the Finnish system. Chemistry is a very conceptual subject that has lots of mathematics behind it. 7th graders cannot yet comprehend some logics, not until they reach the 8th grade, so the idea of the NCC is that from the 8th grade, they can do something more theoretical because their brains are just developing enough so that they can learn it. (T5P&C)

T1B&G, who taught Key Stage 3 & Key Stage 4 Biology in the UK for a year, prefers the flexibility of the Finnish NCC structure:

(2)The Finnish NCC allows more flexibility in the way I teach. The whole thing wouldn't collapse if I teach something differently, but the UK curriculum is more rigid and restrict in this sense. (T1B&G)

Oates's (2010) study seems to confirm T1B&G's observation on the British curriculum. Despite its merits the curriculum is overloaded, resulting in pressure on teachers to move with undue pace through the material and encouraging a 'tick list' approach to teaching.

Secondary CLIL teachers did not appear to refer to the role of language in curricular concerns. All but one teacher, T2B&G who had a three-year in-service CLIL training and decades of experience in being a CLIL practitioner, stated without reservation that teachers should always prioritise students' access to content before the teaching content itself.

Teachers reported that they did not identify any explicit language objectives in the curriculum and they did not have an explicit and systematic approach to teaching the language. The only explicit activity of language teaching is related to the learning of terminology. This phenomenon, as is observed by Gibbons (2002), poses challenges to the successful integration of content and language. In addition, Arnold and Rixon (2008) underscore that the success of CLIL depends very much on teacher skills in mediating language and development of learners' inquiry skills.

This does not mean that the CLIL teachers do not take students' level of language into account at all. Ample evidence of this can be seen in the efforts all teachers make in producing more comprehensible materials for their target students. However, the way respondents prioritise content shows quite clearly that most secondary teacher participants, although teaching their subjects through a foreign language, still see themselves more as traditional subject content teachers rather than CLIL teachers. This attitude, I believe, largely contributes to a lack of explicit integration of language in the curriculum, which can hinder learners' systematic language development.

Taking a closer look at the Finnish NCC, it does, in fact, include sections on subject specific literacy although it is not applicable in practice due to the lack of substance and specification. For example, the learning objective of the subject of History has a very small language component which only appears to relate to reading skills:

The ability to read and analyse sources produced by actors of the past and to competently interpret their meaning and significance. (FNBE 2014)

This requirement describes the literacy content in rather general terms compared with, for example, its counter section in the UK KS3 history curriculum where the literacy requirements run alongside specific subject concepts, whilst clearly stating written genres:

Understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance, and use them to make connections, draw contrasts, analyse trends, frame historically-valid questions and create their own structured accounts, including written narratives and analyses. (National Curriculum in England: history programmes of study 2013)

From a language teacher's perspective, it is much easier to identify specific language items to be supported in the teaching of history in the UK history curriculum e.g. "cause and consequence", "similarities and differences", "analyse trends", "frame questions", and "written narratives".

Taking into consideration the lower secondary teachers' positive views and the fact that they work closely with the NCC, this study supports the proposal of providing a language curriculum alongside with the content curriculum for non-language subjects (e.g. Council of Europe 2015). It is believed that the washback effect of such a dual-purpose curriculum on teacher training, teaching, materials and assessment is the route to the integration of language and content that lies at the heart of success in CLIL programmes. The example of the UK KS3 history curriculum with its content-specific literacy serves as a concrete example of how a dual-purpose curriculum can be achieved.

The next four subsections will report and discuss in detail Finnish lower secondary CLIL teachers' experience with the different types of teaching materials. As is mentioned in section 3.1, Morton's (2013) study showed that most commonly CLIL teachers from four countries in Europe used four main types of materials: (1) textbooks intended for native speakers, (2) CLIL textbooks, (3) adapted authentic materials and (4) their self-made materials. This study identified that in addition to (1) and (4) CLIL teachers in Finnish secondary schools also use local textbooks in Finnish and textbooks designed for the international markets but none of the participants reported usage of CLIL textbooks.

6.1.2 Textbooks in Finnish

Teachers mostly use textbooks in Finnish as a guidance for teaching as they are congruent with the NCC. Physics and Chemistry textbooks in Finnish and their accompanying laboratory and exercise books were reported to have been used regularly to support material preparation. However, T1B&G reported that the Finnish geography textbook covers too many topics and the content is quite challenging, so prioritising topics are needed when using Finnish textbooks and it needs to be taken into consideration that the content is cognitively demanding even when taught in pupils' first language. Similarly, T4H also mentioned the need of prioritising topics in delivering the history curriculum:

(3)I start with curriculum, cover one period of history, choose topics that would be important for the student for this period of history as we cannot do everything, choose the topics that would be the most important to understand to be able to understand later periods of history. (T4H)

Having studied the same situation in primary CLIL textbooks that contain a lot of information beyond the curriculum, Bovellan (2014) sees the ability to prioritize as one of the major gains in terms of CLIL materials. The freedom to prioritize the topics, she argues convincingly, can force teachers to reflect on the precedence of certain contents and design materials to suit a particular group.

Finnish textbooks are particularly useful for the units that cover local contexts such as Finnish forest and Finnish history. In fact, teachers reported that in some EMI schools where classes have a homogenous makeup of Finnish speaking students, these local context bound chapters are being conveniently taught in Finnish. T1B&G argues that she thinks it makes much more sense to teach these chapters in Finnish. The main reason being that many of the Finnish terms do not have English translations readily available, at least not as far as she could find. In the Finnish forest topic, for example, the key learning objective is to be able to recognise and learn the names of species many of which only exist in the Finnish ecosystem. As her school had a tradition to teach the pupils all chapters in English, her approach to teaching the local context unit in English was to look for

official translations and on the occasions where she could not find the English equivalent she translated some words to English by herself. History teachers, on the other hand, did not have the issue of finding equivalent terms in teaching Finnish history.

CLIL teachers also set reading homework using textbooks in Finnish to Finnish speaking students, this can work as a good preview tool to improve students' understanding of the succeeding lesson in English, but the teachers mentioned that they were realistic about whether or not students actually use the Finnish textbook as they are rarely used in class. For the CLIL classes comprising of a more diverse cultural background such as those in school B, students' levels of Finnish generally were not adequate to access the content in textbook written in Finnish.

In contrast to the findings on the practice of translating Finnish textbooks by primary school CLIL teachers (Bovellan 2014), the secondary school CLIL practitioners were strong opponents of such practice, with or without CLIL training. They mentioned that they do not believe in translating materials and had very good reasons to believe so. This practice is also adamantly opposed by some researchers. In addition to the questionable teachability of the texts translated by teachers who are not professional translators, Fernández and Halbach (2011) also pointed out that little change in classroom practice will take place if new CLIL teachers are not provided with time to rethink and reshape their own personal subjective theories about teaching.

To summarize, textbooks in Finnish serve as a guide for interpreting and applying the NCC. They are also necessary in the teaching of some subjects such as Biology and Geography. It can be argued that in a bilingual programme, it seems logical to teach some units in the native language as artificially translating the local content into English by the teachers can be time-consuming and counterproductive.

6.1.3 Textbooks designed in the target language

The situation around the usage of textbooks designed for English speaking countries, mostly British and American markets, is much more complicated and differs across different subjects.

Naturally, CLIL teachers seek to adopt textbooks designed for target language countries, in the case of the present study predominantly the US and the UK, as they are professionally produced by reputable publishers and used for students of the same age in the schools of the target language, therefore, raising hopes for providing ready-made contents with rich linguistic input.

However, Bovellan's (2014) study on primary school CLIL teaching suggests that teachers do not find L1 materials applicable for CLIL in the Finnish context in three main aspects: topic selection, the depth of knowledge and the level of language. This is in line with the findings from the present study.

Secondary school CLIL teachers across subjects concurred that many themes in the textbooks in English are not relevant to the Finnish context such as coastlines of British Isles and British/American history. For those topics that match, teachers found that the British textbooks tend to discuss a topic more in depth than its Finnish counterpart. The least utilizable textbooks in English reported were American secondary Physics and Chemistry textbooks and the core reason, as mentioned above in section 6.1.1, was because of the discrepancy in the content structures between science subjects in the basic education Finnish NCC and those in American K-12 curriculum.

T5P&C's noted also that in practice the Finnish NCC encourages 7th graders to start from making observations through conducting laboratory practicals instead of going straight into theory. The comparative study between the science curriculum in Finland and the US (Inkinen Burns and Cunningham 2017) appears to support T5P&C's finding. They found that the Finnish units contain fewer student activities to answer the driving questions and activities are described in more general terms, but are more specific about what students will do.

All teachers reported the difficulty of the level of language used in the textbooks designed for native English speaking students despite the fact that bilingual students from school A are quite strong in English and have been exposed to plenty of authentic materials in their previous education.

Hence it can be concluded that textbooks designed for target language countries seem to have failed to meet the demands of CLIL classroom in Finland. Nevertheless, teachers have found that textbooks designed for the international market are quite suitable for their pupils. T4H commented:

(4)For Year 8 students, we use Cambridge IGCSE history as a textbook. This is designed for international students and it appears that the language is much simpler and easier for students to adopt. Half of this book can be used. Sometimes this book goes too deep in some of these topics. But there are good chapters like this 'Fall of European empire', 'African colonies and Asia', and 'Countries getting independent'. These chapters can be used fully. (T4H)

Teachers of Biology and Geography also stated that they could make good use of international textbooks. The teacher participants, however, seem to use international textbooks to a varying degree; the more experienced teachers have found suitable textbooks to distribute to their pupils to be used both in class and at home whilst the less experienced teachers only use a few sections from different textbooks and found that they sometimes cannot afford the time they need to find the matching content at the right level of language. T3H decided, therefore, to abandon the idea of adopting textbooks and produce everything by herself.

The reason for this could be that the more experienced teachers are likely to be used to teaching with textbooks. The experienced teachers mentioned that when they started their teaching career, internet resources were not available. Therefore, they had to make do with the most suitable textbooks available and opt for learning more techniques that could make up for the shortcomings of textbooks. For instance, T2B&G made use of illustrations when language became difficult.

To sum up, both primary and lower secondary school CLIL teachers do not find L1 materials applicable for CLIL in the Finnish context. Lower secondary school CLIL teachers of various subjects, however, found that they can make good use of the textbooks written for a global market.

6.1.4 Self-written materials

In contrast to primary school CLIL teachers' lack of confidence in their own language competence in writing their own materials (Bovellan 2014), the secondary school teachers were

fairly confident and the majority of their materials used in the classroom were self-written. The sources of their writing includes textbooks in Finnish and English and supplementary digital resources such as lesson slides, internet resources and their own knowledge of the subjects. The types of materials (worksheets, slides, reading texts etc.) that needed to be written differed across the subjects depending on the availability of other types of ready-made or partially ready-made resources.

With regard to language related issues when writing their own materials, both T6P&C and T4H highlighted that they had learned through experience that they must write using very simple English although they have employed different methods to balance the content and language input. T6P&C, who wrote all the materials she used in the classroom, stated that she wrote using repetitive grammatical patterns so that students can learn and adopt the language. However, she admitted being concerned about students' academic language development as a result of being exposed only to simple English.

In contrast, T4H expressed confidence in her support for developing the students' academic language. In addition to the self-written ones, T4H had input materials from different sources accounting for around 40% of the input materials and according to her, the good writers in her class were those who read the most. She said she learned to adapt her language to the styles which were used in Finnish language textbooks and tried to keep the English to about the same level and the paragraphs about the same structure and length. Nevertheless, the general rule of thumb was to keep the sentences simple and explanations short enough so that they were easier to read and more understandable.

To conclude, lower secondary CLIL teachers are confident in writing their own materials. In fact, self-written materials account for more than half of the collection of their resources. They tend to write at the level that is accessible to their target students and compensate for the hindrance of language development by providing other reading materials such as international textbooks and authentic materials (original and adapted).

6.1.5 Adaptations of authentic materials

All teachers reported that they often seek out authentic materials for inspiration. The evidence for all these three different types of authentic materials categorised in Bovellan's (2014) study have also been found in the work of secondary CLIL teachers i.e. target materials not originally intended for purposes of teaching and learning, materials for the purposes of teaching and learning from target language countries and materials applicable to the Finnish context.

Teachers agreed unanimously that, in spite of spending a long time searching, they could rarely find suitable resources in the target language that were accommodative of both content and language. The reason lies in the fact that when the language is suitable, the content is not cognitively challenging enough and when the content is at the right level, the language tends to be too difficult. This difficulty can also be textual, for instance, T5H comments that texts found online are often lengthy and adorned with excessive details.

The assessment of the appropriate level of content and language in materials seemed to be based on the teachers' knowledge of their pupils, generally based on the length of time they have taught them. When secondary CLIL teachers reported the students' language ability, they used the descriptors such as 'good' 'very low' 'native' 'in-between' which strongly suggest that the schools may not have a profile of students' language proficiency in place to inform the teachers' lesson preparation. The CLIL teachers themselves also did not have any form of diagnostic measure to inform their adaptation decisions.

This is also the case in the primary school according to Bovellan (2014) and she argued that this revealed the teachers' views of learning as mostly a teacher-centred activity. A teacher's knowledge of the students indeed is very important in how teacher prepares the material but Bovellan reminds us of the necessity to take a student-centred approach to the assessment of the material to be modified.

Another result that mirrors the situation in primary school is that the lower the grades the more adaptation was needed. This resonates also with previous findings indicating that beginning lower proficiency level foreign language learners will benefit most from texts that are less lexically, syntactically and rhetorically dense than authentic texts (Crossley et al. 2007).

Regardless, authentic materials are obviously worth striving for particularly because of the models of the target language in use that they provide (Moore and Lorenzo 2007). Adapting materials appears to be a promising strategy to make materials more accessible linguistically and cognitively. In contrast to the results from the primary school where some teachers maintained that materials taken from L1 resources had to be adapted to the level of the target group whilst others opted for the use of original authentic L1 text (Bovellan 2014), CLIL teacher participants in secondary schools were all proponents of the former view. T2B&G, for instance, made an impressive collection of authentic materials resources over the course of her teaching career at school B. She thoroughly demonstrated how she made use of these resources for grade 7-9 students and it was noticeable that nearly all materials required some form of prior treatment in order to meet the learning needs.

The occasions where authentic materials were left ‘untouched’ were when the materials were already at the right linguistic and cognitive level, when students were already quite familiar with the topic, or when they could be used as differentiated teaching material for students with high level of language skills.

With regard to the second key focus of the study the three approaches identified in Lorenzo’s (2008) study, i.e. simplification, elaboration and rediscursification, were discovered both in the interviews and in the materials the teachers provided.

It is rather important to bear in mind that, as it is the case for primary school, the major reason for adaptations reported by the participants was to assure that pupils would understand the content. In consequence, the adaptation pays little attention to language development let alone at a systematic level that an ideal CLIL programme strives for.

6.2 Teachers' strategies of adapting and designing materials

This section addresses secondary school CLIL teachers' approaches to materials adaptation, more specifically in the area of text modification. Using Lorenzo's (2008) model of input modification, the table below shows a breakdown of specific strategies identified based on all teacher participants' account as well as an in-depth analysis of the materials provided (text modification strategies used by individual teachers can be found in Appendix 4). This will be discussed in more details with evidence from the teaching materials in the following subsections. With the aim to observe the implications for teaching and learning, the participants' approaches to text modification will be evaluated in light of the theoretical framework.

Simplification	lexical	<ol style="list-style-type: none"> 1. use high frequency words 2. remove unnecessarily difficult vocabulary 3. search for L1 cognates 4. Higher ratio of content word to functors 5. remove idiomatic language 6. limit the use of synonyms 7. use translation
	syntactic	<ol style="list-style-type: none"> 1. sentences are shortened into phrases to convey ideas. Relations between ideas are marked with punctuations and symbols such as colons and arrows. 2. all questions are formulated with wh-question marks, short simple sentence structures and nearly no clause
Elaboration	adding redundancy	<ol style="list-style-type: none"> 1. adding redundancy through paraphrase: add English definition
Rediscursification	typology	<u>Changes in text typology: typeface</u> <ol style="list-style-type: none"> 1. new terminologies are highlighted in bold and underlined in the English version 2. paragraph to bullet points (text describing a process); 3. texts are divided into small sections in different shaped text frames. 4. shorten the text.
	format	<ol style="list-style-type: none"> 1. parenthetical information 2. glossary
	insert questions	<ol style="list-style-type: none"> 1. create a set of questions at the end of a text.
Mix	Simplification & Elaboration	<ol style="list-style-type: none"> 1. reduction and restructure

Table 4 an overview of text modification strategies used by the teacher participants

6.2.1 Simplification

Simplification, involving an attempt to lower linguistic intricacy by using less complex vocabulary and syntax is the most basic input modification strategy (Lorenzo 2008). The present results show that less experienced teachers with no CLIL training used simplification strategies on all three levels: lexical, syntactic and lexical-syntactic, with lexical being the most common level. More experienced teachers and the teacher with CLIL qualification, however, did not use any simplification strategies.

The various strategies of simplification can be detected in the following original and adapted excerpts from T1B&G's teaching material for the 8th grade biology:

Regulation of the Heartbeat

When you run up a flight of stairs or are startled by a sudden noise, your heart is likely to beat faster than it does when you are at rest. A specific region of your heart muscle, known as the **pacemaker**, sets the rate at which your heart contracts (Figure 30-7). The pacemaker is located in the wall of the right atrium. It generates electrical impulses that spread rapidly over the walls of both atria, making them contract. The impulses then spread to a region of the heart called the **AV node** (atrioventricular node). From there, the electrical impulses spread to the ventricles, causing them to contract. The contracting ventricles propel blood to the rest of the body.

The pacemaker ensures that the heart beats in a rhythmic cycle. During the relaxation phase, called diastole, the atria and ventricles are relaxed, allowing blood from veins to enter the heart. The contraction phase is called systole. First the atria contract, and blood is forced into the ventricles, which are relaxed. Then the ventricles contract, pumping blood into arteries, while the atria are relaxed. This cycle repeats about every second when you are resting.

The pacemaker is controlled by both the nervous system and the endocrine system. Two sets of opposing nerves control the pacemaker by speeding it up and by slowing it down. Hormones secreted into the blood also control the pacemaker. For example, the hormone epinephrine, also called adrenaline, increases heart rate when the body is under stress.

Extract 1 from the original text 'Heart and its functioning'

Regulation of the Heartbeat

When you run up a flight of stairs or are startled by a sudden noise, your heart is likely to beat faster than it does when you are at rest. **Heart muscle generates its own contractions.** The heart rate is controlled by both the **nervous system** and **hormones** (=endocrine system), such as **adrenaline**, which increases heart rate when the body is under stress. (Fight or flight)

During the **relaxation phase**, called **diastole**, the atria and ventricles are relaxed, **allowing blood from veins to enter the heart.** The contraction phase is called **systole**. **First the atria contract, and blood is forced into the ventricles, which are relaxed. Then the ventricles contract, pumping blood into arteries, while the atria are relaxed.** This cycle repeats about every second when you are resting.

Extract 2 from the resulting text of 'Heart and its functioning' modified by T1B&G

Here, the teacher decided to scaffold the learning by limiting the number of new terms introduced to students. She strategically removed the information on the more specific regions such as the pacemaker of the heart muscle and, as a result, lowered both linguistic and cognitive demands by refocusing students' attention on the generation of contractions. This was done to ease students into learning more about the regulation of the heart rate that follows. Another method used is the reduction of the number of synonyms introduced. For instance, 'the hormone epinephrine', the synonym for 'adrenaline', was not mentioned in the adapted text.

The teachers simplified the texts for the purposes of improving comprehension, removing irrelevant content and sensitizing students to the key learning content and vocabulary. The teachers reported that the better they knew a group the more confidence they had in deciding what content needed simplifying.

As was mentioned previously in section 4.4.1, the results of the current studies on the effects of simplification on reading comprehension are inconclusive and contradictory. It is argued that simplified texts may appear to satisfy readability criteria for lower ability readers, but they do not necessarily guarantee understanding (Blau 1982). This is supported by Widdowson (1978) and Davies (1984), who argue that simplified lexis is not necessarily semantically easier to understand and simple words are likely to be highly multi-faceted (cited in Keshavarz, Atai and Ahmadi 2007).

Some benefits of simplification are found by previous studies, namely that students perceive simplified texts more positively (Ali 2017) and have improved scores in an exam situation (Abedi, Lord and Plummer 1997, Kong 2017) suggesting that comprehension improves. Despite risking developing inappropriate reading strategies for unsimplified English in the long run (Honeyfield 1977), some teachers believe in improving comprehension by using simplified materials (Rix 2006).

The studies currently available can serve as a useful guide for teachers to observe other factors that affect the interaction between content and linguistic simplification such as language proficiency and prior knowledge. The results of Keshavarz, Atai, and Ahmadi's (2007) study show that

linguistic simplification facilitates the comprehension and recall of the content-unfamiliar text, whereas it impedes the comprehension and recall of the content-familiar text.

This finding, according to Keshavarz, Atai, and Ahmadi's (2007), along with the previous literature on text selection, may shed new light on more valid approaches to reading materials for EFL students with different proficiency levels and schematic backgrounds. It can also, I believe, justify some of the participants' pedagogical approaches to simplifying texts. One example is to introduce new topics using simplified texts and exposing learners to authentic texts as extended reading at the end of the unit.

However, it comes as no surprise that the previous studies are unanimous on the fact that simplification diminishes the authenticity value of texts (Widdowson 1978 and Davies 1984, cited in Keshavarz, Atai and Ahmadi 2007). Text simplification can hinder natural language development or impede language acquisition by removing linguistic items that the reader needs to learn (Honeyfield 1977, Yano, Long and Ross 1994, Oh 2001). In addition, Goodman and Freeman (1993) made a case that the use of simplification creates misconceptions about language. Perhaps it is on these solid accounts that the experienced teachers have decided to refrain from using simplified materials.

As far as vocabulary learning is concerned, the current study shows that the lower secondary school CLIL teachers prioritised the learning of the content vocabulary. In the cases when the teachers modified lexical items the purposes were to simplify, to delay the learning of the higher level technical terms, or to remove idiomatic linguistic items which cause confusion. Hence, the teachers took a more deliberate, albeit unsystematic and intuitive, approach to introducing content vocabulary learning. The review of studies on input simplification and vocabulary acquisition witnessed inconsistencies among the results on incidental vocabulary learning. Hence, it is recommended for teachers not to simply rely on students learning vocabulary incidentally from simplified input but make use of in and out of classroom activities that aim at intentional vocabulary learning.

In summary, experienced teachers stayed clear of using simplification whilst less experienced teachers employed various simplification strategies. The results of previous studies on simplification are largely inconsistent on its effect on reading comprehension, vocabulary learning and the effect of the interaction between simplification and reading comprehension with other factors such as learners' language proficiency and prior knowledge. Previous studies, however, agree that simplification can lead to the distortion of the authenticity value of texts, which causes concerns for language acquisition.

6.2.2 Elaboration

As presented in section 4.2, the goal of elaborated texts is to reduce cognitive complexity without over modifying the original linguistic texture (Lorenzo 2008). The clarity of the meaning is the main purpose, whilst keeping the language as close to the original as possible. According to the data, only one further defined type of elaboration technique was detected and this was adding redundancy by paraphrasing. Both experienced and inexperienced teacher participants made use of this technique. It is important to note that the data of the current study is not quantitative, so the fact that only one elaboration strategy was identified does not imply that elaboration was used less frequently than simplification.

An example of the technique used in practice can be found in the resulting text 'Regulation of the Heartbeat' in the previous section where the teacher paraphrased the term 'endocrine system' with 'the nervous system and hormones' and used it in the main sentence and added the new term in brackets (=endocrine system).

We have not seen, however, examples of other common strategies listed by Moore and Lorenzo (2007) such as removal of pronouns with unclear antecedents, lower type-token ratio and adding redundancy through repetition and retention of full noun phrases.

The previous empirical studies that compared simplification and elaboration revealed that elaboration improves comprehension as successfully as simplification (Oh 2001 and Urano 2000)

and the former is preferable since it preserves the naturalness and immediacy of the text (Moradian, Naserpoor and Tamri 2013). The positive effects of elaboration is not only on L2 comprehension but also on lexical aspects of language learning e.g. incidental vocabulary acquisition (Shirinzarii and Mardani 2011, cited in Negari and Rouhi 2012, Urano 2000, Moradian and Adel 2011) and meaning recognition (Kim 2006). The only study, to the knowledge of the researcher, that indicated an advantage in lexical learning through input simplification was found by Ghorbanian and Jabbarpoor (2017). According to the results of their study the simplified input group significantly outperformed the elaborated group on the learning and retention of phrasal verbs.

The input elaboration technique identified in the current study is adding redundancy through paraphrase using English definitions in parenthesis. Negari and Rouhi (2012) investigated the effects of two types of lexical elaboration: parenthetical and non-parenthetical and the results revealed that both types of elaboration were conducive to incidental vocabulary acquisition, but comparatively, the parenthetical elaborated group outperformed the non-parenthetical elaborated group on two incidental vocabulary measures.

The main purpose of adding redundancy through paraphrasing in the sample materials received was to explain linguistic items that were unfamiliar to students. It is also used on occasions to draw a connection between the current item and students' previous knowledge. Speaking of prior knowledge, Kim and Van Dusen's (1998) study found that it is necessary to provide elaboration of the main points for students with low levels of prior knowledge, but it is counterproductive for learners with high level of prior knowledge.

To conclude, teacher participants, both experienced and less experienced, only made use of one type of elaboration technique, i.e. adding redundancy by paraphrase. In contrast to simplification there is more consistent evidence on the positive effects of elaboration on reading comprehension as well as vocabulary acquisition. It also has the inherent advantage of preserving the naturalness of language and it is therefore safe to recommend teachers to prioritise elaborative input modification techniques in cases where they might previously have used simplification techniques.

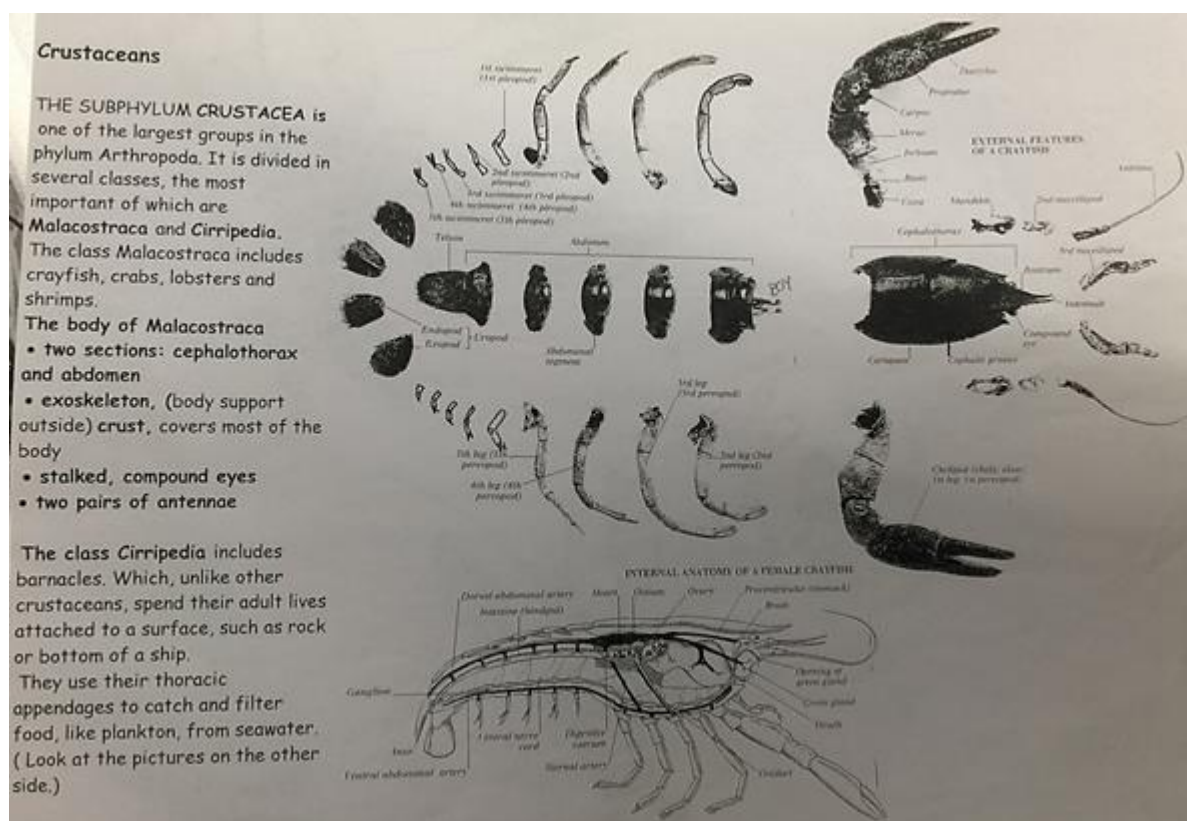
6.2.3 Rediscursification

Based on his discourse analysis on the three types of linguistic adjustments used by CLIL teachers, Lorenzo (2008) concludes that rediscursification operates at a textual level. Adaptors reversed the priorities in the adaptation process in a way that centralises the student readers: the text has to adapt itself to the student rather than the student to the text. As a result of this process, adaptors seem to have done the work based on the assumption that texts need to be redefined not only from a formal viewpoint but also with regard to content and format. It is for this reason that rediscursified texts appear to be more meaningful, more relevant and more informative while remaining academic.

My analyses show that rediscursification was the most popular approach to text input modification among the teacher participants. Every teacher employed at least one of the sub-techniques of rediscursification as listed in table 4 section 6.2 in order to reappropriate the language and format of the original text with the intention of improving the learnability of the text.

In general, teachers operate much more on a section-level than a whole-text level. This is perhaps a reflective of the culture where CLIL teachers must also work as materials designers, thereby having the opportunity to adapt their material to the needs of their target teaching groups. After all, only class teachers have the firsthand knowledge of what type of text, instructional style, and level of language etc. that is more suitable for their students.

The manifold ways of rediscursification are shown here in the reading text adapted by T2B&G:



Worksheet 1 a biology reading text adapted from various sources

According to her comments in the interview, the teacher first rewrote the third paragraph about the body of Malacostraca, changing sentences to words and phrases and organising them under bullet points. Then she changed the typeface by highlighting the key information in bold. To demonstrate parts of the crustaceans described in the text more clearly, she added diagrams of the internal and external structure of crustaceans as none of the pictures in the source texts were anatomical.

None of the other resdiscursification strategies that would result in changing any linguistic features and complexity of the text were found, namely, meaning adaptation, explicit engagement devices, and models of pedagogic discourse. The techniques identified among the participants' materials can be categorised under typology, format, and insert questions. These kinds of techniques used by the teacher participants were classified and termed by Bhatia (1983: 46) as 'easification'.

Bhatia defines easification as techniques aimed at making texts more accessible to the learners without modifying their content or form. He argues that easification is a more effective and quicker

way of achieving the goal of bringing the text closer to the reader's level of linguistic competence. Bhatia states that by leaving the input more or less authentic and unsimplified, we can give learners an additional instructional apparatus by developing a kind of 'access structure' around the text (1983: 46). The purpose of this is not to help comprehension directly, but to guide learners through the text, thereby helping them with their intake.

In terms of pedagogical implications, Bhatia sees easified materials as having tremendous potential for a task-oriented methodology for classrooms in which the emphasis is on the learner as a performer and not as a passive spectator. In addition, most of the easification devices have the potential to be transformed into various language activities in the classroom.

The easification features identified in this study were also commonly found in CLIL materials used in Spain where they appear to act as instructional scaffolding to facilitate learning (Guerrini, 2009).

In addition, the Spanish CLIL materials show adaptation at the level of content area which deals with communicating the genre, vocabulary and language characteristic of the discipline. One example of this takes the form of adding instructions and information in the borders of text to familiarise learners with text features which prepare them to understand authentic materials. This level of adaptation was not found among the Finnish CLIL teacher participants.

In conclusion, the term *rediscursification* has only been coined in the past decade and the effects of this strategy have not yet been studied to the same extent as simplification and elaboration. Yet, it is the only technique that can be identified in every participant's input adaptation practice and it is also commonly found in CLIL materials used in Spain. The scale of adaptations as well as types of strategies used among the subjects of this study, however, are quite limited, and perhaps caused by the teachers' heavy workload.

This approach can, in some ways, be an upgrade of elaboration in terms of improving access to natural language and increasing learner autonomy because the resulting text aims to maintain authenticity whilst providing an access structure around the text to guide learners through it.

Moreover, once students have learned to read independently using the built-in instructional apparatus, it then opens up possibilities for classroom language activities and cooperative learning tasks.

7 CONCLUSION

7.1 Summary of the study

What are the Finnish secondary CLIL teachers' views of teaching materials and the role of National Core Curriculum (NCC)?

Finnish secondary teachers work with the Finnish curriculum and they are positive about following the NCC. CLIL teachers predominantly see themselves as subject teachers and prioritize the teaching of content. Language development, therefore, is not systematically integrated into the teaching and learning but can be achieved in limited areas as a result of incidental learning. As there are no suitable CLIL textbooks available, teachers make use of these four types of materials: 1) textbooks in Finnish, 2) textbooks designed in the target language, 3) self-written materials, and 4) adaptations of authentic materials.

Teachers' self-written materials account for more than half of the resources they use in class. This is partly due to a lack of input in the target language for the local context topics and partly due to, as is unanimously agreed by all teachers, that they rarely can find authentic materials that accommodate both content and linguistic needs of their target students. The general rule of thumb in terms of language when teachers write their materials is to make it simple and comprehensible and to employ useful patterns of language repetition so as to facilitate retention and imitation. More experienced teachers found that the textbooks designed for international markets are less linguistically demanding and, therefore, can be adopted fully when the topics are suitable. In the case of adopting authentic materials, teachers frequently employ a large repertoire of strategies to adapt the materials to meet the teaching and learning needs.

What are the teachers' approaches to text modification?

All three approaches to text modification, i.e. simplification, elaboration and rediscursification, have been identified in teacher participants' materials adaptation process. Less experienced teachers used a wide variety of the substrategies of simplification. However, experienced teachers, perhaps intentionally, avoided using simplification. The elaboration technique, adding redundancy by paraphrasing, is adopted by both experienced and inexperienced teachers while none of the other substrategies are identified. Rediscursification is the only technique that can be identified in every participants' input adaptation practice. The use of the type of rediscursification strategies among the subjects of this study, however, is limited to changes in text typology and format adaptation.

What pedagogical implications can be revealed using the results from a survey of the empirical studies on input modification?

The previous research cannot be used to justify the use of simplification for improving reading comprehension and vocabulary learning as the results of these studies are inconsistent and contradictory. Therefore, current practitioners do not have any solid theoretical backing to support the use of simplified material for their learners. The inconsistency in the current available research, however, should not be a reason to abandon simplified material completely. It is, however, highly advisable for teachers who have reasons to use this approach to carry out action research that assesses the effect of simplified materials on learning.

Another aspect teachers can benefit from in the previous studies, despite their inconsistency, is their observations concerning factors such as language proficiency and prior knowledge that affect the interaction between simplification and reading comprehension. For instance, these two can be added as variables in the action teachers can carry out on the use of simplified materials with their target students.

Perhaps the most convincing argument for avoiding the use of simplification is the fact that it makes the texts less authentic and thereby hinders the learners' access to natural language. CLIL non-language subject teachers who predominantly see themselves as subject teachers instead of language teachers are likely to sacrifice authenticity in exchange for a perceived improvement in comprehension. Yet evidence shows not just teachers (Rix 2006), but also students perceive simplified texts positively (Kong 2017), and reading comprehension scores are improved as a result (Abedi, Lord and Plummer 1997, Kong 2017).

Nevertheless, the CLIL participants are concerned particularly with the development of academic language especially for those who mostly rely on using self-written materials. A practical compromise is found by some teachers by using simplified texts when introducing a new topic and exposing learners to authentic texts when they are familiar with the basic terms and concepts or as an extended reading for higher language proficiency students.

In contrast, the result of the previous research on the effects of elaboration on reading comprehension and vocabulary learning are consistently positive. Since the goal of the elaborated text is to reduce cognitive complexity without reducing the original linguistic complexity much, the approach has an inherent advantage of preserving the authenticity value of the language. Therefore, teachers are advised to consider prioritising the use of elaborative input modification techniques. The current study found that the teachers are used to elaborating by using target language definitions in parenthesis and parenthetical elaboration has been found to be more effective than non parenthetical elaboration for incidental vocabulary learning. Teachers are encouraged to experiment with other elaboration strategies identified by Lorenzo (2008), e.g. removal of pronouns with unclear antecedents, lower type-token ratio and adding redundancy through repetition and retention of full noun phrases

Rediscursification was identified only relatively recently by Moore and Lorenzo (2007) and its effects on comprehension and learning have thus not been looked into. This study found that the participants mostly used these substrategies of rediscursification: changes in text typology and

format adaptation. These two techniques were referred to in Bhatia's (1983) work as easification. He argues that easification can, in some ways, be seen as an upgrade of elaboration on access to natural language and learner autonomy as the resulting text maintains authenticity whilst providing an 'access structure' around the text to guide learners through the text (Bhatia 1983: 46). Once students have learned to read independently using the built-in instructional apparatus, it then opens up possibilities for classroom language activities and cooperative learning tasks. Teachers are also recommended to experiment with other rediscursification substrategies e.g. meaning adaptation, explicit engagement devices, and models of pedagogic discourse

7.2 Limitations of the study

The present study uses a qualitative data analysis method, thereby bearing the limitations that are typical of this approach. The findings of this study are not generalizable because of the context-bound analysis generated from a limited number of participants. The purpose of this study is to describe lower secondary CLIL teachers' experience with teaching materials and evaluate the approaches of input modification they have used. Therefore, it is not meaningful to formulate regularities about the behaviour of the research subjects. It is important to bear in mind that the findings only correspond to the views of the participants.

It is also worth highlighting that the part of the study concerning the teachers' views on teaching materials only reflect their views at the specific time of the interviews. The results are likely to be different when the study is replicated at a different time because people tend to reframe the meaning of experiences within the context of their immediate lives (Mishler 2006).

Another major concern of qualitative studies that affects the reliability is the role of the researcher as the central research instrument as the end result is highly dependent on the interpretations of the researcher (Maxwell 2012). For instance, the method the researcher used to interpret the results of the teachers' approaches to adaptation is by categorising them in three

different ways: by individual teachers, subjects and types of teaching materials. Had the data been analysed by a researcher using a different way of categorisation, the results could be different.

Data triangulation is used to improve the reliability of the study. As is mentioned in section 5.3, to analyse teachers' approaches to text adaptation, they were asked to provide an in-depth description of these strategies by showing a sample unit of work in the interview. These materials were then collected and analysed by the researcher.

The source text of some of the materials were in Finnish which is not a language the researcher has enough proficiency to work with. Two Finnish speaking English Philology PhD candidates were approached to help with the post-analysis of these materials. In addition, this study included some secondary sources as the primary sources are only available in languages that the researcher cannot access e.g. Finnish and German.

The final consideration concerns the limitations of previous input modification studies that were used to create the main theoretical framework. The findings show that the research in this field is largely inconclusive especially in terms of language acquisition. The measures of these studies have also been questioned e.g. response types (O'Donnell 2009 and Urano 2000), nominal scale (Urano 2000) as well as variables such as reaction time (Urano 2000), frequency, and amount of adaptation (Urano 2000).

7.3 Suggestions for further research

The first part of the study looked into lower secondary school CLIL teachers' experience with teaching materials and discovered that more than half of the materials are written by teachers from scratch. It was not possible within the scope of the current study to go further into teachers' approaches to self-written materials. Future studies could investigate these materials, for instance, by focusing on the teachers' use of sources, adaptations and language. With regard to the use of textbooks, it seems that teachers found that the level of language used in global textbooks written for L2 learners is more appropriate than the ones written for L1 learners. Hence, a comparative

study can be conducted using these L1 and L2 textbooks (e.g. GCSE history textbook and IGCSE history textbook) to find out the differences in linguistic features which help to improve learners' access to content. Such a study could be used to create a linguistic resource bank for a variety of topics at different grade levels, which would benefit teacher material writers and inform the construction of a systematic language curriculum for CLIL programmes.

This study moves us a step closer to setting quality criteria in material design by surveying the current available research on evaluating the effectiveness of approaches to text adaptation. The finding suggests that it is not yet possible to make solid claims on the principles of using simplification given that the results of the studies currently available are largely inconclusive. More research in this field is need to eliminate the previously mentioned limitations in input adaptation studies. The studies on the effect of text modification strategies on language learning available have so far seem to be limited to the area of vocabulary development. Future research should also investigate the effect on other aspect of language skills such as grammar and writing. Another potential area for further study could focus on observing the patterns and research gaps by classifying existing text modification studies by age and language proficiency level of the participants. Currently, only a handful of studies compare the effectiveness of input adaptation for learners with different levels of language proficiency (e.g. Oh 2001 and Crossley, Yang and McNamara 2014). In addition, the approach of rediscursification formulated by Lorenzo (2008) is yet to receive research attention. It is worthy of further investigation as the approach has huge potential for autonomous learning.

REFERENCES

- Abbasian, G. R. and Mohammadi, H. S. H., 2016. The effect of lexical modification on developing vocabulary knowledge in relation to language proficiency level. *Theory and Practice in Language Studies*, 6(10), pp.1964-1970.
- Abedi, J., Lord, C. and Plummer, J., 1997. *Language background as a variable in NAEP mathematics performance* (CSE Tech. Rep. No. 429). Los Angeles: University of California, Center for the Study of Evaluation
- Admiraal, W., Westhoff, G. and de Bot, K., 2006. Evaluation of Bilingual Secondary Education in the Netherlands: Students' Language Proficiency in English. *Educational Research and Evaluation*, 12(1), 75-83.
- Ali, M. A., 2017. Impact of language input on comprehensiveness of reading material among students in Saudi Arabia. *International Journal of Learning, Teaching and Educational Research*, 16(9), pp.88-97.
- Alonso, E., Grisaleña, J. and Campo, A., 2008. Plurilingual education in secondary schools: Analysis of results. *International CLIL Research Journal*, 1(1), 36-49.
- Apsel, C., 2012. Coping With CLIL: Dropouts from CLIL Streams in Germany. *International CLIL Research Journal*, 1(4), 47-56. Available at <http://www.icrj.eu/14/article5.html>, accessed May 2018.
- Arnold, W. and Rixon, S., 2008. Materials for Teaching English to Young Learners. In: Tomlinson, B., ed. *English Language Teaching Materials: A Critical Review*. London, New York: Continuum, 39-55.
- Avalos, B., 2011. Teacher professional development in Teaching and Teacher Education over ten years. *Teaching and Teacher Education* 27, 10-20.
- Banegas, D. L., 2011. Teaching more than English in secondary education. *ELT Journal*, 65(1), 80-82.
- Banegas, D. L., 2012. CLIL teacher development: Challenges and experiences. *Latin American Journal of Content & Language Integrated Learning*, 5(1), 46-56.
- Barbero, T., 2007. CLIL in scientific fields: from teaching language to learning activities. In Marsh, D. and Wolff, D., eds. *Diverse Contexts – Converging Goals. CLIL in Europe*. Peter Lang: Mehrsprachigkeit in Schule und Unterricht, 287-298.
- Bhatia, V. K., 1983. Simplification v. Easification - The Case of Legal Texts. *Applied Linguistics*, 4, 42-54.

Blau, E. K., 1982. The effect of syntax on readability for ESL students in Puerto Rico. *TESOL Quarterly*, 16, 517–528.

Bonnet, A., 2012. Towards an evidence base for CLIL: How to integrate qualitative and quantitative as well as process, product and participant perspectives in CLIL research. *International CLIL Research Journal*, 1(4), 66-78.

Borzova, E. V. 2008. Teachers as Change Agents: Critical Thinking Tasks in a Foreign Language Classroom and Reflections on Printed Materials. In Tella, S. (ed.). *From Brawn to Brain: Strong Signals in Foreign Language Education*. Proceedings of the VikiPeda-2007 Conference in Helsinki, May 21-22, 2007. Research Report 290. Helsinki: Helsinki University Press, 29-54.

Bovellan, E., 2014. Teachers' beliefs about learning and language as reflected in their views of teaching materials for Content and Language Integrated Learning (CLIL). *Jyväskylä studies in humanities*, (231).

Brinton, D. M., Snow, M. A. and Wesche, M., 2003. *Content-Based Second Language Instruction*. The University of Michigan Press.

Bull, P. H., 2013. Cognitive constructivist theory of multimedia: designing teacher-made interactive digital. *Creative Education*, 4(09), 614.

Butler, Y. G., 2013. Bilingualism/multilingualism and second-language acquisition. In: Bhatia, T. and Ritchie, W., eds. *The handbook of bilingualism and multilingualism*, 109-136.

Cammarata, L. and Tedick, D. J., 2012. Balancing content and language in instruction: The experience of immersion teachers. *The Modern Language Journal*, 96(2), 251-269.

Cañado, M. L. P., 2018. The effects of CLIL on L1 and content learning: Updated empirical evidence from monolingual contexts. *Learning and Instruction*, 57, 18-33.

Chaudron, C., 1983. Simplification of input: Topic reinstatements and their effects on L2 learners' recognition and recall. *TESOL quarterly*, 17(3), 437-458.

Chibaka, E. F., 2018. Advantages of Bilingualism and Multilingualism: Multidimensional Research Findings. Available at <https://www.intechopen.com/books/multilingualism-and-bilingualism/advantages-of-bilingualism-and-multilingualism-multidimensional-research-findings>, accessed May 2018.

Chung, H., 1995. Effects of elaborative modification on second language reading comprehension and incidental vocabulary learning. Unpublished master's thesis, University of Hawai'i at Manoa.

Coelho, E., 1998. Teaching and Learning in Multicultural Schools. Multilingual Matters.

Council of Europe, 2015. The Language Dimension in All Subjects: a Handbook for curriculum development and teacher training. Available at <https://www.ecml.at/coe-docs/language-dimensions-subjects-EN.pdf>, accessed 29 January 2019.

Coyle, D., 2005. Planning tools for teachers. The University of Nottingham: School of Education. Available at <http://www.slideshare.net/gorettiblanche/theoretical-clil-framework>, accessed December 2018.

Coyle, D., 2009. Promoting Cultural Diversity through Intercultural Understanding: a Case Study of CLIL Teacher Professional Development at In-Service and Pre-service Levels. From cultural awareness to intercultural understanding: constructing the theoretical background for the case study. In: Carrió-Pastor, M. L., ed. *Content and Language Integrated Learning: Cultural Diversity*. Bern: Peter Lang AG, 105-124.

Coyle, D., Hood, P. and Marsh, D., 2010. *CLIL. Content and Language Integrated Learning*. Cambridge: University Press.

Crossley, S. A., Louwse, M. M., McCarthy, P. H. and McNamara, D. S., 2007. A Linguistic Analysis of Simplified and Authentic Texts. *The Modern Language Journal*, 91, 15-30.

Crossley, S., Yang, H. S. and McNamara, D., 2014. What's so simple about simplified texts? A computational and psycholinguistic investigation of text comprehension and text processing. *Reading in a Foreign Language*, 26(1), 92.

Doiz, A. and Lasagabaster, D., 2017. Teachers' beliefs about translanguaging practices. *Translanguaging in higher education: Beyond monolingual ideologies*, 157-176.

Ellis, R., 1993. Naturally Simplified Input, Comprehension, and Second Language Acquisition. Available at <https://files.eric.ed.gov/fulltext/ED371577.pdf>, accessed July 2018.

Evnikskaya, N. and Morton, T., 2011. Knowledge construction, meaning-making and interaction in CLIL science classroom communities of practice. *Language and Education*, 25(2), 109-127.

Dalton-Puffer, C., 2007. *Discourse in Content and Language Integrated Learning (CLIL) Classrooms*. Amsterdam: John Benjamins Publishing company.

Dalton-Puffer, C., 2009. Communicative Competence and the CLIL Lesson. In: Jiménez Catalan, Y. and Ruiz de Zarobe, R. S., eds. *Content and language integrated learning: evidence from research in Europe*. Bristol and N.Y.: Channel View Publications, 197-214.

Dalton-Puffer, C., Nikula, T. and Smit, U., 2010. Charting policies, premises and research on content and language integrated learning. In: Dalton-Puffer, C., Nikula, T. and Smit, U., eds. *Language Use and Language Learning in CLIL Classrooms*. Aila Applied Linguistic Series 7. Amsterdam/Philadelphia: John Benjamins Publishing Company, 1-19.

- Dalton-Puffer, C., 2011. Content-and-Language Integrated Learning: From Practice to Principles? *Annual Review of Applied Linguistics*, 31, 182-204.
- Davies, A. 2007. *An Introduction to Applied Linguistics. From Practice to Theory*. Second Edition. Edinburgh: Edinburgh University Press Ltd.
- de Graaff, R., Koopman, G. J. and Westhoff, G., 2007. Identifying Effective L2 Pedagogy in Content and Language Integrated Learning (CLIL). *VIEWZ. Vienna English Working Papers* 16(3), CLIL SPECIAL ISSUE.
- Department of Education, 2013. *National Curriculum in England: history programmes of study*. Available at <https://www.gov.uk/government/publications/national-curriculum-in-england-history-programmes-of-study/national-curriculum-in-england-history-programmes-of-study>, accessed 1st November 2018.
- Dörnyei, Z., 2007. *Research Methods in Applied Linguistics*. Oxford: Oxford University Press.
- Ellis, R., 1994. *The Study of Second Language Acquisition*. Oxford: Oxford University Press.
- European Commission, 2009. Study on the Contribution of Multilingualism to Creativity. Available at http://www.dylan-project.org/Dylan_en/news/assets/StudyMultilingualism_report_en.pdf, accessed August 2018.
- Fernández, R. and Halbach, A., 2011. Analysing the Situation of Teachers in the Madrid Bilingual Project after Four Years of Implementation. In: Ruiz de Zarobe, Y., Sierra, J. M. and del Puerto, F. G., eds. *Content and Foreign Language Integrated Learning. Contributions to Multilingualism in European Contexts*. Peter Lang, 241-264.
- Finnish National Board of Education (FNBE), 2005. Language Proficiency Required from a Teacher in Preschool or Comprehensive School with a Teaching Language Other than the Official Language of the School. Statutes of Finland. Available at <http://www.finlex.fi/sv/viranomaiset/normi/660001/26301>, accessed 8th February 2019.
- Finnish National Board of Education (FNBE), 2014. *National Core Curriculum for Basic Education*. Available at https://www.oph.fi/english/curricula_and_qualifications/basic_education, accessed, 1st November 2018.
- Gass, S. M., 2003. Input and interaction. *The handbook of second language acquisition*, 2, 224-256.
- Gass, S. M. and Selinker, L., 2004. *Second Language Acquisition. An Introductory Course*. Hillsdale: Lawrence Erlbaum Associates.
- George, H. V., 1993. Simplification. In: M. L. Tickoo, ed. *Simplification: Theory and Application* RELC anthology, 31, SEAMEO-RELC, Singapore, 7-13.

Ghorbanian, M. and Jabbarpoor, S., 2017. Effects of lexical simplification and elaboration on Iranian intermediate EFL learners' learning and retention of phrasal verbs. *Theory and Practice in Language Studies*, 7(11), pp.1003-1010.

Gibbons, P., 2002. *Scaffolding language, scaffolding learning*. Portsmouth, NH: Heinemann.

Gierlinger, E. M., 2007a. The three pillars of modular CLIL: findings from an Austrian research project. In: Marsh, D. and Wolff, D. eds. *Diverse Contexts – Converging Goals. CLIL in Europe*. Peter Lang: Mehrsprachigkeit in Schule und Unterricht, 211-226.

Gierlinger, E. M., 2007b. Modular CLIL in lower secondary education: some insights from a research project in Austria. In Dalton-Puffer, C. and Smit, U., eds. *Empirical Perspectives on CLIL Classroom Discourse*. Peter Lang, 79-118.

Goodman, K. S. and Freeman, D., 1993. What's Simple in Simplified Language? Available at <https://files.eric.ed.gov/fulltext/ED371578.pdf>, accessed June 2018.

Guerrini, M., 2009. CLIL materials as scaffolds to learning. In: Marsh, D., Mehisto, P., Wolff, D., Aliaga, R., Asikainen, T., Frigols-Martin, M., Hughes, S. and Langé, G., eds. *CLIL Practice: Perspectives from the Field*, 74–84.

Guest, G., MacQueen, K. M. and Namey, E. E., 2012. *Applied Thematic Analysis*. Thousand Oaks: Sage Publications Inc.

Hartiala, A.-K. 2000. *Acquisition of Teaching Expertise in Content and Language Integrated Learning*. University of Turku. Turku: Painosalama Oy.

Hamers, J. F., Blanc, M. and Blanc, M. H., 2000. *Bilinguality and bilingualism*. Cambridge University Press.

Honeyfield, J., 1977. Simplification. *TESOL Quarterly* 431-44.

Holguín, B. R. and Morales, J. A., 2014. Materials development in the Colombian context: Some considerations about its benefits and challenges. *How*, 21(2), 134-150.

Inkinen, J., Burns, J. and Cunningham, K., 2017. Comparison of Curriculum in the Us and Finland. Available at https://keynote.conference-services.net/resources/444/5233/pdf/ESERA2017_0448_paper.pdf, accessed September 2018.

Juan-Garau, M. and Salazar-Noguera, J., eds., 2015. *Content-based language learning in multilingual educational environments*. Berlin: Springer International Publishing.

Keshavarz, M. H., Atai, M. R. and Ahmadi, H., 2007. Content schemata, linguistic simplification, and EFL readers' comprehension and recall. *Reading in a Foreign Language*, 19(1), p.19. Available at <http://nflrc.hawaii.edu/rfl/April2007/keshavarz/keshavarz.html>, accessed 13 June 2018.

Kim, Y., 2006. Effects of input elaboration on vocabulary acquisition through reading by Korean learners of English as a foreign language. *Tesol Quarterly*, 40(2), 341-373.

27/05/18

Kim, S. I. and Van Dusen, L. M., 1998. The role of prior knowledge and elaboration in text comprehension and memory: a comparison of self-generated elaboration and text-provided elaboration. *The American Journal of Psychology*, 111(3), 353-378.

Koopman, G. J., Skeet, J. and de Graaff, R., 2014. Exploring content teachers' knowledge of language pedagogy: a report on a small-scale research project in a Dutch CLIL context. *The Language Learning Journal*, 42(2), 123-136.

Krippendorff, K., 2018. *Content analysis: An introduction to its methodology*. Sage publications.

Kong, D. K., 2017. Effects of Text Elaboration on Korean Reading Comprehension. *The Korean Language in America*, 21(1), 53-88.

Kumaravadivelu, B., 2006. *Understanding Language Teaching. From Method to postmethod*. Mahwah: Lawrence Erlbaum Associates, Inc.

Lasagabaster, D., 2008. Foreign Language competence in content and language integrated courses. *The Open Applied Linguistics Journal*, 1, 31-42.

Lasagabaster, D., 2015. Different educational approaches to bi-or multilingualism and their effect on language attitudes. In: *Content-based language learning in multilingual educational environments*. Springer, Cham, 13-30.

Leow, R. P., 1997. Simplification and second language acquisition. *World Englishes*, 16(2), 291-296.

Llinares, A. and Whittaker, R., 2006. Linguistic analysis of secondary school students' oral and written production in CLIL contexts: studying social science in English. *VIEWZ. Vienna English Working Papers*, 15(3), 28-32.

Llinares, A. and Whittaker, R., 2010. Writing and speaking in the history class. A comparative analysis of CLIL and first language contexts. In: Dalton-Puffer, C., Nikula, T. and Smit, U. *Language Use and Language Learning in CLIL Classrooms*, 125-143.

Llinares, A., Morton, T. and Whittaker, R., 2012. *The Roles of Language in CLIL*. Cambridge University Press.

Lorenzo, F., 2008. Instructional discourse in bilingual settings. An empirical study of linguistic adjustments in content and language integrated learning. *Language Learning Journal*, 36(1), 21-33.

- Lorenzo, F., 2013. Genre-based curricula: multilingual academic literacy in content and language integrated learning. *International Journal of Bilingual Education and Bilingualism*, 16(3), pp.375-388.
- Lotherington-Woloszyn, H., 1993. Do Simplified Texts Simplify Language Comprehension for ESL Learners? Available at <https://files.eric.ed.gov/fulltext/ED371583.pdf>, accessed March 2019.
- Lucietto, S., 2008. A model for quality CLIL provision. *International CLIL Research Journal*, 1(1), 83e92.
- Mäkiranta, P., 2014. CLIL teachers as Material Designers. Master's Thesis. University of Jyväskylä.
- Marefat, F. and Moradian, M. R., 2008. Effects of lexical elaborative devices on second language vocabulary acquisition: Evidence From Reading. *Teaching English Language (Teaching English Language and literature society of Iran)*, 2(6), 101-124.
- Marsh, D., 2002. CLIL/EMILE-The European dimension: Actions, trends and foresight potential. Public Services Contract DG EAC: European Commission.
- Maxwell, J. A., 2012. *Qualitative research design: An interactive approach (Vol. 41)*. Sage publications.
- Maxwell-Reid, C. and Lau, K.C., 2016. Genre and technicality in analogical explanations: Hong Kong's English language textbooks for junior secondary science. *Journal of English for Academic Purposes*, 23, pp.31-46.
- McGrath, I., 2008. *Materials Evaluation and Design for Language Teaching*. Edinburgh: Edinburgh University Press.
- Mehisto, P., 2008. CLIL Counterweights: Recognising and decreasing disjuncture in CLIL. *International CLIL Research Journal*, 1(1), 93–119
- Mishler, E. G. 2006. Narrative and identity: the double arrow of time. In: de Fina, A., Schiffrrin, D., and Bamberg, M. eds. *Discourse and identity. Studies in Interactional sociolinguistics* 23. Cambridge: Cambridge University Press, 30-47.
- Moate, J. M., 2011. The impact of foreign language mediated teaching on teachers' sense of professional integrity in the CLIL classroom. *European Journal of Teacher Education*, 34(3), 333-346.
- Montet, M. and Morgan, C., 2001. Teaching Geography through a foreign language: how to make text accessible to learners at different levels. *Language Learning Journal*, 24, 4-11.
- Moore, P. F. and Lorenzo, F. 2007. Adapting Authentic Materials for CLIL Classrooms: an Empirical Study. *View[z]: Vienna English Working Papers* 16(3), December 2007, 29-36.

- Moradian, M. R. and Adel, M. R., 2011. Explicit lexical elaboration as an autonomy enhancing tool for acquisition of L2 vocabulary from reading. *Studies in Literature and Language*, 3(3), 153-159.
- Moradian, M. R., Naserpoor, A. and Tamri, M. S., 2013. Effects of lexical simplification and elaboration of ESP texts on Iranian EFL university students' reading comprehension. *International Journal of Psychology and Behavioral Research*, 2(6), 332-338.
- Morton, T. 2013. Critically evaluating materials for CLIL: Practitioners' practices and perspectives. In: Grey, J., ed. *Critical Perspectives on Language Teaching Materials*, 111-136.
- Negari, G. and Rouhi, M., 2012. Effects of lexical modification on incidental vocabulary acquisition of Iranian EFL students. *English Language Teaching*, 5(6), 95-104.
- Nikula, T., Dalton-Puffer, C., and García, A. L., 2013. CLIL classroom discourse: Research from Europe. *Journal of Immersion and Content-Based Language Education*, 1(1), 70-100.
- Nikula, T. & C. Dalton-Puffer 2014. Content and Language Integrated Learning. *The Language Learning Journal* 42(2), 117-122.
- O'Donnell, M. E., 2009. Finding middle ground in second language reading: Pedagogic modifications that increase comprehensibility and vocabulary acquisition while preserving authentic text features. *The Modern Language Journal*, 93(4), 512-533.
- Oates, T., 2010. Could do better: Using international comparisons to refine the National Curriculum in England. *Curriculum journal*, 22(2), 121-150.
- Oh, S. Y., 2001. Two types of input modification and EFL reading comprehension: Simplification versus elaboration. *TESOL quarterly*, 35(1), 69-96.
- Pan, Y.-C. and Pan, Y.-C., 2010. The Use of L1 in the Foreign Language Classroom. Available at file:///C:/Users/yuzi/Downloads/The_Use_of_L1_in_the_Foreign_Language_Classroom.pdf, accessed March 2019.
- Parker, K. and Chaudron, C., 1987. The effects of linguistic simplifications and elaborative modifications on L2 comprehension. *University of Hawai'i Working Papers in ESL*, 6(2), 107-133.
- Rajander, S. 2010. School and choice: An ethnography of a primary school with bilingual classes. Finnish Educational Research Association. Research in Educational Sciences 50. Jyväskylä: Jyväskylä University Press.
- Rix, J., 2009. A model of simplification: the ways in which teachers simplify learning materials. *Educational Studies*, 35(2), 95-106.
- Schleppegrell, M. J. and O'Hallaron, C. L., 2011. Teaching Academic Language in L2 Secondary Settings. *Annual Review of Applied Linguistics*, 31, 3-18.

- Schreier, M., 2012. *Qualitative Content Analysis in Practice*. London: SAGE Publications Ltd.
- Snow, M. A., 1993. Discipline-Based Foreign Language Teaching: Implications from ESL/EFL. In: Krueger, M. and Ryan, F., eds. *Discipline- and Content-Based Approaches to Language Study*. Lexington: D.C. Heath and Company, 37-56.
- Stoller, F. L., 2004. Content-based instruction: Perspectives on curriculum planning. *Annual Review of Applied Linguistics* 24, 264-283
- Sylvén, L. K., 2006. How is extramural exposure to English among Swedish school students used in the CLIL classroom? *View[z]: Vienna English Working Papers*, 15(3), 47-53.
- Sylvén, L. K., 2010. Teaching in English or English teaching? On the effects of content and language integrated learning on Swedish learners' incidental vocabulary acquisition. *Gothenburg Studies in English* 97. University of Gothenburg.
- Tan, M., 2011. Mathematics and science teachers' beliefs and practices regarding the teaching of language in content learning. *Language Teaching Research*, 15(3), 325–342.
- Tapscott, D., 2009. *Grown up digital. How the net generation is changing your world*. New York: Mc-GrawHill.
- Tomlinson, B., 1998. Introduction. In: Tomlinson, B., ed. *Materials development in language teaching*. Cambridge: Cambridge University Press, 1–24.
- Urano, K., 2000. Lexical simplification and elaboration: Sentence comprehension and incidental vocabulary learning. Unpublished master's thesis. University of Hawai'i at Manoa.
- Van de Craen, P., Ceuleers, E., Lochtman, K., Allain, L. and Mondt, K., 2007. An interdisciplinary research approach to CLIL learning in primary schools in Brussels. In: Dalton-Puffer, C. and Smit, U., eds. *Empirical Perspectives on CLIL Classroom Discourse*. Peter Lang, 253-275.
- Vollmer, H. J., 2008. Constructing tasks for content and language integrated learning and assessment. In Eckerth, J. and Siekmann, S., eds. *Task Based Language Learning and Teaching. Theoretical, Methodological and Pedagogical Perspectives*. Peter Lang, 227-290.
- Wyatt, M., 2011. Becoming a do-it-yourself designer of English language teaching materials. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 12(1).
- Yano, Y., Long, M. and Ross, S., 1994. The effects of simplified and elaborated texts on foreign language reading comprehension. *Language Learning*, 44(2), 189-219.
- Young, D. N., 1999. Linguistic simplification of SL reading material: Effective instructional practice?. *The Modern Language Journal*, 83(3), pp.350-366.

APPENDIX 1 A list of Modification Strategies

Process	Linguistic Dimension	Final aim	Operating Principle	Main Strategies Used
Simplification	sentence-framed changes	To reduce linguistic complexity for increasing understanding	Simplify, not amplify	Short and simple sentences movement of topics to front positions in the sentence High frequency vocabulary Higher ratio of content word to functors Avoidance of sentence embeddings Limited range of syntactical and semantic relations Lexical simplification search for L1 cognates
Elaboration	text-framed changes	To elaborate the discourse to make it cognitively simpler while keeping linguistic difficulty	Amplify, not simplify	Highlighting of important concepts Removal of pronouns with unclear antecedents Lower type-token ratio Maintenance of original complexity in syntax and lexis Adding redundancy through repetition, paraphrase and retention of full noun phrases
Rediscursification	discourse-framed changes	To adapt meaning, form and format to a new instructional situation. Texts are redesigned	Deepen, not broaden	Changes in text typology: from ideational to involving texts More overt interactional structure: questions inserted Explicit engagement devices: writer-oriented features (explicit markers of evaluation and attitude, hedges, boosters), reader references Meaning adaption: high activity levels, ideational reduction, secondary ideas are shortened Format adaptation: asides, footnotes, graphs, visual aids, glossaries, parenthetical information, pretasks search for L1 cognates provide learners with models of pedagogic discourse replace technical vocabulary to semi technical vocabulary

A list of modification strategies adapted from Lorenzo 2008 and Lorenzo and Moore 2007

APPENDIX 2 A survey of text modification studies

Survey of Simplification Studies and Results

Note:

*=statistically significant; ns=statistically nonsignificant

? cannot access the full article to extract the details

- secondary sources or in some cases, the studies are theoretical and thereby has no participants

1. Simplification-reading comprehension

study	participants	simplification area	instrument type	results
Crossley, Yang and McNamara, 2014	19 male, 29 female Grade 10-13, From lower intermediate to advanced	lexicon, syntax	Gates-MacGinitie Reading Test, multiple choice reading test	beginning level ST were comprehended better than AT
Keshavarz et al., 2007	four groups of 60 students (30 of a low- and 30 of a high-proficiency level) male Iranian EFL students ages between 20 and 46	lexicon, syntax, lexicon and syntax	the Nelson English Language Test and eight reading comprehension tests. content-familiar and the content-unfamiliar tests Multiple choice	has NS effect on reading comprehension & recall
Young, 1999	2 nd year university Spanish	Mostly Lexicon	Written recall and comprehension	aids comprehension at word level, not overall
Leow, 1997	2 nd semester university/ Spanish	discourse (text length)	comprehension and form recognition	significant aid to comprehension, but not form recognition
Yano et al., 1994	Varying/ English	sentence length, syntax, lexicon	comprehension (replication, synthesis & inference)	simplified forms significantly aided comprehension
Leow, 1993	Low/Intermediate Spanish	lexicon & Syntax	Pretest: recall Posttest: form recognition	Comprehension aided, not intake
HV George, 1993	?	?	?	reduce the communication hindering and enhance the communication facilitating aspect of his message encoding
Blau 1982	Low/Medium/High English	Syntax, sentence length	Multiple choice (main idea)	Simplified texts with lower readability levels, as measured by common readability formulae, did not facilitate the reading comprehension of his ESL participants. shorter sentence length does not aid comprehension

2. Simplification-authenticity

study	participants	simplification area	-	results
Crossley, Louverse, McCarthy, and McNamara, 2007	beginning ESL textbooks reading passages in grammar textbooks, reading and writing textbooks and basic readers 100 words	simplified (81) and authentic (24) texts included all text varieties	-	do not demonstrate natural cause-effect relationship as well as AT, do not develop plot & ideas sufficiently increased redundancy & amplified explanation
Honeyfield, 1977; Long & Ross, 1993; Yano et al., 1994; Oh, 2001	-	-	-	hinders learning natural language
Widdowson, 1978 and Davies, 1984	-	-	-	SS might result in distorting the authenticity value of texts and eventually render texts less readable
Goodman and Freeman, 1993	-	-	-	The use of S not only makes learning harder but creates misconceptions about language.

3. Simplification-language proficiency

study	proficiency levels	simplification area	instrument type	results
Crossley, Yang and McNamara, 2014	19 male, 29 female Grade 10-13, From lower intermediate to advanced	lexicon, syntax	Gates-MacGinitie Reading Test, multiple choice reading test	S benefit lower language ability learners
Keshavarz et al., 2007	four groups of 60 students (30 of a low- and 30 of a high- proficiency level) male Iranian EFL students ages between 20 and 46	lexicon, syntax, lexicon and syntax	the Nelson English Language Test and eight reading comprehension tests. content-familiar and the content-unfamiliar tests Multiple choice	Language proficiency had a significant effect on both reading comprehension and recall, whereas linguistic LS and SS showed no significant effect.
Oh, 2001	430 Korean 2 nd year Korean high school students intermediate level	<ol style="list-style-type: none"> 1. baseline reading passages 2. simplified (shorter utterances, less complex syntax and lexis) 3. elaborated text: added redundancy and clearer signaling of thematic structure 	comprehension test: general, specific and inferential	higher proficiency learners benefited more from S

4. Simplification-prior knowledge

study	proficiency levels	simplification area	instrument type	results
Crossley, Yang and McNamara, 2014	19 male, 29 female Grade 10-13, From lower intermediate to advanced	lexicon, syntax	Gates-MacGinitie Reading Test, multiple choice reading test	benefit lower knowledge learners high knowledge participants comprehended beginning ST to a lesser degree than lower knowledge readers
Keshavarz et al., 2007	four groups of 60 students (30 of a low- and 30 of a high- proficiency level) male Iranian EFL students ages between 20 and 46	lexicon, syntax, lexicon and syntax	the Nelson English Language Test and eight reading comprehension tests. content-familiar and the content-unfamiliar tests Multiple choice	content schemata has a greater effect than LS or SS on both EFL reading comprehension and recall LS had a significantly facilitative effect on reading comprehension of the content-unfamiliar texts, but it had an impeding effect on the participants' comprehension of the content-familiar text. The lexical simplification had a significantly facilitative effect on reading comprehension of the content-unfamiliar texts, but it had an impeding effect on the participants' comprehension of the content-familiar text.

5. Simplification-vocabulary

study	proficiency levels	simplification area	instrument type	results
Ghorbanian and Jabbarpoor, 2017	130 learners, ages between 13 to 16 years old, intermediate level	lexicon (replacing an input with synonymous word)	pretest: preliminary English test posttest: immediate multiple choice test	Simplified input group significantly outperformed the control and elaborated group on both learning and retention of phrasal verbs
Negari and Rouhi, 2012	80 students, ages 18-26 years old,	lexicon (parenthetical and non-parenthetical)	Form recognition test meaning production test prior knowledge vocabulary test	Lexical simplification did not result in incidental vocabulary acquisition
Shirinzari and Mardani, 2011	150 university students	lexicon (incidental vocabulary acquisition)	Nelson English Language Test Vocabulary posttests	simplified texts were more effective for students as long as incidental vocabulary learning was concerned
Urano, K, 2000	40 participants, age range 18-49, elementary to intermediate	lexicon (unknown words substituted with high frequency synonyms, adding synonyms of the unknown words in apposition to them)	2 vocabulary tests: a form recognition and a meaning recognition test	lexical simplification does not trigger vocabulary acquisition

6. Simplification-others

study	proficiency levels	simplification area	instrument type	results
Ali, M.A., 2017	100 male students, ages 18 to 20 years	lexicon (unknown words replaced with synonyms or rephrasing of complete sentence), syntax (complex sentences to compound or simple ones, adding anaphoric expressions), lexicon & syntax	IELTS, multiple choice questions, inference questions avoided	The comprehensiveness can assist students in learning the study modules yet, it is also presumed that simplification may not enhance the students' capability to comprehend the second language more efficiently.
Crossley, Yang and McNamara, 2014	19 male, 29 female Grade 10-13, From lower intermediate to advanced	lexicon, syntax	Gates-MacGinitie Reading Test, multiple choice reading test	Simplified texts can be read faster
Miramontes et al., 2011	?	?	?	hinders learning academic language
Honeyfield, 1977; Long & Ross, 1993; Yano et al., 1994; Oh, 2001	-	-	-	simplified texts are not interesting
Day and Bamford, 1998	?	?	?	a necessity for intensive courses
Brunfit, C, 1993	?	?	?	the process of S enables their user to concentrate on what is currently important
HV George, 1993	?	?	?	contribution towards bringing about learner autonomy
L'Allier, 1980	?	?	?	lexical and syntactic text revision brings low ability readers above the performance level of middle ability readers on the original text.
Honeyfield, 1977	?	?	?	develop reading strategies that are inappropriate for unsimplified English

7. Simplification-lexical and syntactic simplification

study	participants	simplification area	instrument type	results
Safari, M. and Mohaghegh Montazeri, M., 2017	60 female intermediate EFL learners, with an age range of 18 to 28	lexical, syntactic and lexical-syntactic simplifications	a general proficiency test (TOEFL, 2003) 30 multiple choice reading comprehension items posttest: 40 corresponding TOEFL reading comprehension questions	The lexical-syntactic simplification group significantly outperformed the lexical simplification group and performed considerably better than the syntactic simplification group. There was no significant difference between the lexical and syntactic simplification groups, although the latter showed better results.
Urano, K., 2000	40 ESL students with the age range 18 to 49, elementary to higher intermediate	Baseline simplified elaborated	2 vocabulary tests: a form-recognition test, and a meaning-recognition test	lexical simplification does not trigger vocabulary acquisition
Twiss, 1998	Intermediate English	Lexicon, syntax, (separate & combined)	multiple choice achievement test	lexically ST may produce readers who score higher than readers of other types of text lexical modification aides factual extraction
Yano, Long & Ross, 1993	483 university students, varied proficiency	Lexicon, syntax	pretest: the Structure Subtest Form A of the CELT Reading comprehension multiple choice questions (replication, synthesis, and inference)	When extraction of explicitly stated factual information is called for in a reading task, syntactic and lexical simplification may be sufficient aids for non-native readers
L'Allier, 1980	?	?	?	lexical and syntactic text revision brings low ability readers above the performance level of middle ability readers on the original text.
Mountford, 1975	?	?	?	syntactic simplification does not necessarily make the text more readable. (a change in the illocutionary force, distort the message and lower its authenticity value)

Survey of Elaboration Studies and Results
1. Elaboration-reading comprehension

study	proficiency levels	elaboration area	instrument type	results
O'Donnell, M.E., 2009	197 undergraduate students,	lexicon; syntax	word count totals, recall in English, supply meanings of lexical items found in the texts in English, via short constructed responses	recall more information about the texts and could identify more vocabulary that appeared within the texts the level of text difficulty played a pivotal role students who read unmodified texts that were relatively easy to comprehend benefited the least from these modifications
Oh, S.Y., 2001	430 Korean 2 nd year Korean high school students intermediate level	<ol style="list-style-type: none"> 1. baseline reading passages 2. simplified (shorter utterances, less complex syntax and lexis) 3. elaborated text: added redundancy and clearer signaling of thematic structure 	comprehension test: general, specific and inferential	improve comprehension as successfully as simplification
Urano, K., 2000	45 L1 Japanese ESL learners in the US	<ol style="list-style-type: none"> 1. unmodified 2. lexically simplified 3. lexically elaborated 	<p>comprehension:</p> <ol style="list-style-type: none"> 1. mean reading times 2. sentence comprehension questions <p>acquisition (40 nonsense target words):</p> <ol style="list-style-type: none"> 1. Form recognition posttest 2. Meaning-recognition posttest 	improve comprehension at sentence level

Yano, Long & Ross, 1993	483 university students, varied proficiency	Unmodified NS baseline sentences and the number of multisyllabic words and embedded clauses to a minimum) elaborated (parenthetical paraphrase, definitions of low frequency content words)	pretest: the Structure Subtest Form A of the CELT Reading comprehension multiple choice questions (replication, synthesis, and inference)	provide semantic detail that foreign language learners find helpful when making inferences result in texts that on the surface are linguistically more complex, although cognitive simpler than the original versions
Goodman and Freeman, 1993	-	-	-	Text becomes more cognitively demanding
Cervantes, 1983; Kelch, 1985; Chaudron and Richards, 1986; Fujimoto et al, 1986; Brown, 1987; Tsang, 1987; Blau, 1990	-	-	-	improve comprehension consistently

2. Elaboration-authenticity

study	proficiency levels	elaboration area	instrument type	results
O'Donnell, M.E., 2009	Intermediate level Spanish			literary texts could have an expanded role in L2 instruction for lower proficiency students, thus representing a compromise between those who advocate the exclusive use of authentic reading materials and those who suggest that pedagogically modified texts are more appropriate for this level student.
Oh, S.Y., 2001	430 Korean 2 nd year Korean high school students intermediate level	<ol style="list-style-type: none"> 1. baseline reading passages 2. simplified (shorter utterances, less complex syntax and lexis) 3. elaborated text: added redundancy and clearer signaling of thematic structure 	comprehension test: general, specific and inferential	retain native like qualities
Yano, Long & Ross, 1993	483 university students, varied proficiency	Unmodified NS baseline simplified (keep the length of sentences and the number of multisyllabic words and embedded clauses to a minimum) elaborated (parenthetical paraphrase, definitions of low frequency content words)	pretest: the Structure Subtest Form A of the CELT Reading comprehension multiple choice questions (replication, synthesis, and inference)	provide rich linguistic forms

3. Elaboration-reading skills and language proficiency

study	proficiency levels	elaboration area	instrument type	results
Abbasian, G.R. and Mohammadi, H.S.H., 2016	40 students, ages 17-22, elementary and pre-intermediate	lexicon	pretest: two reading diagnostic tests for measuring vocabulary knowledge posttest: two reading comprehension tests	language proficiency level plays a significant role in determining the effects of modification procedures as the pre-intermediate group significantly outperformed the elementary one; then, elaboration in both groups and pre-intermediate as a proficiency level proved to play a significant role in the process of modification-based vocabulary development.
Oh, S.Y., 2001	430 Korean 2 nd year Korean high school students intermediate level	<ol style="list-style-type: none"> 1. baseline reading passages 2. simplified (shorter utterances, less complex syntax and lexis) 3. elaborated text: added redundancy and clearer signaling of thematic structure 	comprehension test: general, specific and inferential	accelerate the progression to fluent reading
Long, M.H., Ross, S., 1993	483 university students, varied proficiency	Unmodified NS baseline sentences and the number of multisyllabic words and embedded clauses to a minimum) elaborated (parenthetical paraphrase, definitions of low frequency content words)	pretest: the Structure Subtest Form A of the CELT Reading comprehension multiple choice questions (replication, synthesis, and inference)	provide opportunities for more effective learning strategies to be implemented, including the ability to process texts at a deeper level
Moore and Lorenzo, 2007	23 MFL teachers	-	-	Learner levels, choice of techniques (e.g. lower level learners may misinterpret synonyms as additional information, must be employed with great care in the case of younger or lower level learners)

4. Elaboration-context and prior knowledge

study	participants	elaboration area	instrument type	results
Kim, S.I. and Van Dusen, L.M., 1998	20 undergraduates	prior knowledge HPK/elaborated HPK/unelaborated LPK/elaborated LPK/unelaborated	incidental learning phase immediate test phase rate the comprehensibility of episodes	<p>Readers in the HPK reading condition retained about the same number of target facts in both elaborated and unelaborated conditions, whereas readers in the LPK reading condition retained more target facts in the elaborated condition than in the unelaborated condition.</p> <p>The elaborated target sentence were read much faster than the unelaborated target sentences. The main effect of prior knowledge and the interaction effect were not significant, indicating that there was no reading time difference for the target sentence between the HPK and LPK conditions.</p> <p>Readers in the HPK condition rate elaborated texts more comprehensible than readers in the LPK condition. The ability of readers in the HPK condition to generate elaborations seems to help them resolve the difficulty of the less coherence text.</p> <p>Text provided elaborations have their greatest effect on recall of target information only when readers have LPK and thus self generated elaborations to comprehend text because of their ability to generate relevant elaborations.</p> <p>Readers with HPK may not require text provided elaborations to comprehend text because of their ability to generate relevant elaborations.</p> <p>The probability of generating elaborations depends on the degree of causal relatedness between sentences in the text and the amount of prior knowledge.</p> <p>For readers with HPK, self generated elaboration is an automatic process that occurs naturally during reading, but for readers with LPK elaborations are generated only when specific instructions are given.</p>

5. Elaboration-vocabulary

study	participants levels	elaboration area	instrument type	results
Vaezi, S., Biri, A. and Moradi, F., 2018	38 students, ages 13-15, intermediate	explicit lexical elaboration: translations of the selected target words were added in apposition to them	Pretest and posttest: vocabulary scale test	students held positive attitudes to reading elaborated texts and regarded them as effective in their vocabulary learning experience. elaborated version of the texts enable students to gain a significant vocabulary improvement (incidental vocabulary learning) in comparison to readers of non-elaborated version.
Abbasian, G.R. and Mohamm adi, H.S.H., 2016	40 students, ages 17-22, elementary and pre-intermediate	lexicon	pretest: two reading diagnostic tests for measuring vocabulary knowledge posttest: two reading comprehension tests	Elaboration play a significant role in the process of modification-based vocabulary development.
Negari and Rouhi (2012)	80 students, ages 18-26 years old,	lexicon (parenthetical and non-parenthetical)	Form recognition test meaning production test prior knowledge vocabulary test	Parenthetical (PE) and non-parenthetical (NPE) elaboration bot positively affected participants- incidental vocabulary PE draws learners' attention on both the form and meaning of words in the text
Moradian, M.R. and Adel, M.R., 2011	135 university students,	lexicon (replace with low frequency words, shorten the texts, some sentences omitted) explicit elaboration: definition, questioning, naming and description implicit elaboration: apposition, parallelism and paraphrase	Pretest: Cloze test as the overall EFL proficiency measure Posttest: A meaning-recognition L2 vocabulary acquisition posttest	explicit lexical elaboration was the most beneficial technique in meaning recognition of L2 vocabulary in the text. It is also implied from the results of the study that the explicit elaborative device creates the best condition for learners' autonomy

Marefat, F. and Moradian, M.R., 2008	99 freshman students	explicit lexical elaboration implicit lexical elaboration unelaborated	form and meaning- recognition posttests	lexical elaboration devices did not aid form recognition of L2 vocabulary neither explicit nor implicit lexical elaboration devices seemed to make a difference in the acquisition of either the forms or meanings of the previously unknown words in the text. lexical elaboration devices assisted in meaning recognition of L2 vocabulary
Kim, Y., 2006	-	-	-	explicit lexical elaboration –(PE) the recognition of word meanings from reading implicit lexical elaboration—(PE) on the recognition of word meaning from reading only when typographical enhancement are present lexical elaboration triggers incidental vocab acquisition
Urano, K., 2000	45 L1 Japanese ESL learners in the US	1. unmodified 2. lexically simplified 3. lexically elaborated	comprehension: 1. mean reading times 2. sentence comprehension questions acquisition: 1. Form recognition posttest 2. Meaning-recognition posttest	
Chung, 1995	484 grade 9 Korean EFL learners	1. unmodified 2. simplified 3. lexically elaborated 4. structurally elaborated 5. lexically & structurally elaborated 6. control: unmodified text different from the above five treatment texts	comprehension: 20 item multiple-choice reading comprehension test acquisition 1. form recognition posttest 2. immediate meaning recognition posttest 3. delayed meaning recognition posttest	comprehension: 1. simplified>unmodified* 2. elaborated (all versions) > unmodified, but ns 3. simplified>elaborated (all versions), but ns 4. structural> lexical, but ns 5. lexical & structural> lexical, but ns 6. lexical & structural>structural, but ns acquisition: 1. Form: simplified>elaborated (all versions), but ns 2. (Both immediate and delayed) meaning: ns difference between elaborated (all versions), simplified, and unmodified learners who were exposed to elaborated texts were more successful than others at vocabulary learning

6. Elaboration-lexical and structural elaboration

study	proficiency levels	elaboration area	instrument type	results
Marefat, F. and Moradian, M.R., 2008	99 freshman students	explicit lexical elaboration implicit lexical elaboration unelaborated	form and meaning-recognition posttests	lexical elaboration devices did not aid form recognition of L2 vocabulary
Urano, K., 2000	45 L1 Japanese ESL learners in the US	1. unmodified 2. lexically simplified 3. lexically elaborated	comprehension: 1. mean reading times 2. sentence comprehension questions acquisition (40 nonsense target words): 1. Form recognition posttest 2. Meaning-recognition posttest	higher proficiency students benefit more from lexical elaboration lexical elaboration triggers incidental vocab acquisition
Chaudron, C., 1983	236 students preparing for tertiary education in the US,	lexicon: repeated noun, simple noun, synonym, existential syntax: fragment, fronting, question, right dislocation, cleft, pseudo cleft, rhetorical question, if clause	pretest: the Michigan Test of Aural Comprehension and a multiple choice vocabulary test response booklets: recall probes and recognition questions	redundant repeated noun was significantly better recognized than the simple noun redundant repeated noun was better recalled than the conditional or synonym
Chung, H., 1995	484 grade 9 Korean EFL learners	1. unmodified 2. simplified 3. lexically elaborated 4. structurally elaborated 5. lexically & structurally elaborated 6. control: unmodified text different from the above five treatment texts	comprehension: 20 item multiple-choice reading comprehension test acquisition (20 target words) 1. form recognition posttest 2. immediate meaning recognition posttest 3. delayed meaning recognition posttest	structural elaboration appeared to be more effective than lexical elaboration, but no significant

Survey of Simplification and Elaboration Comparative Studies and Results

study	Participants	modification type (types)	instrument type	results
Ghorbanian and Jabbarpoor, 2017	130 learners, ages between 13 to 16 years old, intermediate level	lexicon simplified: replacing an input with synonymous word) elaborated: parenthetical information	pretest: preliminary English test posttest: immediate multiple choice test	Simplified input group significantly outperformed the control and elaborated group on both learning and retention of phrasal verbs
Abbasian, G.R. and Mohammadi, H.S.H., 2016	40 students, ages 17-22, elementary and pre-intermediate	lexicon	pretest: two reading diagnostic tests for measuring vocabulary knowledge posttest: two reading comprehension tests	not only do input modification procedures significantly affect vocabulary development but also the elaboration group outperformed the simplification group.
Moradian, Naserpoor and Tamri, 2013	?	?	?	Simplification and elaboration both contributed to reading comprehension. Nevertheless, elaboration is preferable to simplification since it preserved the naturalness and immediacy of the text.
Oh, S.Y., 2001	430 Korean 2 nd year Korean high school students intermediate level	4. baseline reading passages 1. simplified 2. elaborated text	comprehension test: general, specific and inferential	improve comprehension as successfully as simplification

Silva, 2000	35 ESL learners in the US	<ol style="list-style-type: none"> 1. unmodified 2. lexically elaborated A, B, and C 3. control: unmodified text different from the above two treatment texts 	<p>comprehension: two 10-item multiple-choice reading comprehension tests, one for the elaborated groups and the other for the control group (not analyzed)</p> <p>Acquisition (45 target words):</p> <ol style="list-style-type: none"> 1. Form recognition posttest 2. Decontextualized supply-definition posttest 	<p>acquisition</p> <ol style="list-style-type: none"> 1. lexically elaborated>unmodified, but ns 2. explicit > unmodified >implicit, but ns 3. equal non-effectiveness of implicit elaboration and non-elaboration
Urano, 2000	45 L1 Japanese ESL learners in the US	<ol style="list-style-type: none"> 4. unmodified 5. lexically simplified 6. lexically elaborated 	<p>comprehension:</p> <ol style="list-style-type: none"> 3. mean reading times 4. sentence comprehension questions <p>acquisition (40 nonsense target words):</p> <ol style="list-style-type: none"> 3. Form recognition posttest 4. Meaning-recognition posttest 	<p>comprehension:</p> <ol style="list-style-type: none"> 1. mean reading times: lexically modification (i.e. elaboration and simplification) significantly shortened mean reading times 2. sentence comprehension questions: lexically modification had a positive, but ns, effect on comprehension <p>1&2 positive effects of lexical modification on L2 sentence-level comprehension</p> <p>acquisition:</p> <p>form: lexically elaborated >lexically simplified*; unmodified>lexically elaborated, but ns; and unmodified>lexically simplified*</p> <p>meaning: ns difference between lexically elaborated, lexically simplified, and unmodified</p>
Kim, 1996	211 college freshmen Korean EFL learners	<ol style="list-style-type: none"> 1. unmodified 2. elaborated 3. control: unmodified text different from the above two treatment texts 	<p>comprehension: two 8-item multiple choice reading comprehension tests, one for the elaborated groups and the other for the control groups (not analysed)</p> <p>acquisition (33 target words)</p> <ol style="list-style-type: none"> 1. immediate decontextualized supply-definition posttest 2. delayed decontextualized supply-definition posttest 	<p>acquisition (both immediate and delayed)</p> <ol style="list-style-type: none"> 1. intentional>incidental * 2. elaborated >unmodified, but ns 3. elaborated-intentional>unmodified-intentional, but ns 4. elaborated-incidental>unmodified-incidental, but ns 5. elaborated-intentional>elaborated-incidental, but ns 6. unmodified-intentional>unmodified-incidental, but ns

Chung, 1995	484 grade 9 Korean EFL learners	<ol style="list-style-type: none"> 1. unmodified 2. simplified 3. lexically elaborated 4. structurally elaborated 5. lexically & structurally elaborated 6. control: unmodified text different from the above five treatment texts 	<p>comprehension: 20 item multiple-choice reading comprehension test acquisition (20 target words)</p> <ol style="list-style-type: none"> 1. form recognition posttest 2. immediate meaning recognition posttest 3. delayed meaning recognition posttest 	<p>comprehension:</p> <ol style="list-style-type: none"> 7. simplified>unmodified* 8. elaborated (all versions) > unmodified, but ns 9. simplified>elaborated (all versions), but ns 10. structural> lexical, but ns 11. lexical & structural> lexical, but ns 12. lexical & structural>structural, but ns <p>acquisition:</p> <ol style="list-style-type: none"> 3. Form: simplified>elaborated (all versions), but ns 4. (Both immediate and delayed meaning: ns difference between elaborated (all versions), simplified, and unmodified
Long, M.H., Ross, S., 1993	483 university students, varied proficiency	Unmodified NS baseline simplified (keep the length of sentences and the number of multisyllabic words and embedded clauses to a minimum) elaborated (parenthetical paraphrase, definitions of low frequency content words)	<p>pretest: the Structure Subtest Form A of the CELT</p> <p>Reading comprehension multiple choice questions (replication, synthesis, and inference)</p>	not consistently superior to elaborative modification

APPENDIX 3 CLIL Teacher Interview

Teaching experience

Could you briefly tell me about your teaching experience (school, subject, grade(s), length of teaching)?

How would you describe your learners/class? (class size, English level, learning ability, learning style etc.)

How would you describe your teaching style?

Instruction:

First clarify the definition of materials

Learning materials, teaching materials, and materials, all of which are considered as synonymous in this text. They can be either texts or tasks or anything that helps students learn. It can be in the form, for example, of a textbook, a workbook, a photocopied handout, a powerpoint presentation, an app, a video, a CD, a newspaper, a paragraph written on a whiteboard, a realia: anything which presents or informs about the learning.

General

1. What type of CLIL program does your school offer?
2. How do you see your role as a CLIL subject teacher as opposed to a subject teacher or a language teacher?
3. How do you make use of the NCC? How is the local/school curriculum made in your subject? Are you currently using the NCC? Does it guide teaching in CLIL more than the old curriculum as is expected?
4. What's your experience in preparing materials for CLIL lessons?
5. Do you make use of any checklist/ criteria to measure the quality of your materials? =What do you think is good teaching material in CLIL? Does it somehow differ from mother tongue materials?

Material selection and adaptation

1. What kind of materials do you find the most useful for teaching your subject in English: Finnish textbooks, textbooks written for native speakers, CLIL textbooks or the internet (which websites)?
2. Are there units you can use from your resources without much adaptation at all?
3. What are the factors you consider whilst choosing materials for your learners? (S cognitive/language level, authenticity, multi-modal input, differentiation, learning styles)
4. What specific resource(s) have you found to be the most useful? Why?
5. What do you find the most difficult/problematic about finding/using materials for teaching your subject in English?
6. What kind of adaptation do you often do? =in what ways do you adapt materials to the pupils level of language? and what about the level of cognition?
7. Do you write your own material? When? How often?

APPENDIX 4 Identify text modification strategies used by individual teachers

Simplification	To reduce linguistic complexity for increasing understanding
main strategies	<p>Lexical simplification</p> <p>search for L1 cognates</p> <p>High frequency vocabulary</p> <p>Higher ratio of content word to functors</p> <p>Limited range of syntactical and semantic relations</p> <p>Movement of topics to front positions in the sentence</p> <p>Avoidance of sentence embeddings</p> <p>Short and simple sentences</p>
strategies identified	<p>T1B&G</p> <p><u>Lexical simplification:</u></p> <ol style="list-style-type: none"> 1. Remove unnecessarily difficult vocabulary to improve understanding e.g. names of different white blood cells 2. High frequency vocabulary: Use high frequency words on purpose to build up students vocabulary e.g. plot instead of draw 3. A less formal English term has been chosen e.g. 'tehtävä' (=mission/task/function) has been translated to 'job' and 'veltto' to 'floppy'. 4. Chemical symbols such as O₂ are used instead of the word 'oxygen' in English whilst the word 'happi' is used in the Finnish version 5. Search for L1 cognates: Search for L1 cognate that is close to the word in Finnish for example 'pathogen' is 'patogeeni' in Finnish. Look what's in the textbook and say it in the most similar way possible. 6. Idiomatic language that the teacher has found to confuse CLIL students are avoided 7. Limit the use of synonyms: Paraphrasing of the same instructional terms is encouraged in ready-made test materials marketed for native speaking learners e.g. state the name, give the name, name, what is the name... whilst this practice is avoided in the CLIL paper to reduce confusion instead the instructional language are intentionally kept in repetitive patterns such as the multiple use of the term 'explain your reasoning briefly' and 'Name the numbered parts'. 8. Use translation: <p>Put Finnish translation next to words which do not worth students spending time looking up e.g. spleen, tonsils</p> <p>A Finnish term is given when introduce a new key technical term e.g. corollary arteries (sepelvaltimot)</p> <p>Some content words are translated so that students are able to understand what is asked of them. e.g. punnett square (risteytyskaavio) the teacher said this is translated because the application of the knowledge is much more important than remembering the name. Similarly, terms in other subjects that are taught in Finnish are translated. E.g. the students study Maths in Finnish so in the paper the teacher translated 'probability' to 'todennäköisyys'. She said it is unfair to assume they can understand them.</p> <p>One of the answers asks students to answer in Finnish. This question asks a specific name of a part of male reproductive system. This is the only answer that requires answer in Finnish.</p> <p><u>Sentences simplification:</u></p>

	<p>9. Sentences are shortened into phrases to convey ideas. Relations between ideas are marked with punctuations and symbols such as colons and arrows, occasionally full sentences were used.</p> <p><u>Textual reduction:</u></p> <p>10. Remove content that is not necessary for the NCC, remove content that is not necessary for them to learn to understand. For example, a sentence that gives the name of the sac that encloses the heart and the details about the sound of heartbeat have been removed as well as information and concept checking questions related to the peacemaker</p> <p>11. Remove unnecessarily difficult vocabulary to improve understanding e.g. names of different white blood cells</p> <p>T3H</p> <p><u>Textual reduction:</u></p> <p>12. Shorten the text. Cut the original from 4 pages to 2 pages.</p> <p>T4H</p> <p><u>Lexical simplification:</u></p> <p>1. Change words that are too demanding. Other than topic vocabulary, word choice are not at all demanding</p> <p><u>Sentence simplification:</u></p> <p>2. All questions are formulated with wh-question marks, short simple sentence structures and nearly no clause</p> <p><u>Textual reduction:</u></p> <p>3. Shorten the text</p>
Elaboration	To elaborate the discourse to make it cognitively simpler while keeping linguistic difficulty
main strategies	<p>Highlighting of important concepts</p> <p>Removal of pronouns with unclear antecedents</p> <p>Lower type-token ratio</p> <p>Maintenance of original complexity in syntax and lexis</p> <p>Adding redundancy through repetition, paraphrase and retention of full noun phrases</p>
strategies identified	<p>T1B&G</p> <p>adding redundancy through paraphrase: add English definition: introduced the idea before using simpler language and now introduce the term for the first time e.g. antigens (surface structures)</p>
Rediscursification	To adapt meaning, form and format to a new instructional situation. Texts are redesigned.
main strategies	<p>Changes in text typology: from ideational to involving texts</p> <p>More overt interactional structure: questions inserted</p> <p>Explicit engagement devices: writer-oriented features (explicit markers of evaluation and attitude, hedges, boosters), reader references</p> <p>Meaning adaption: high activity levels, ideational reduction, secondary ideas are shortened</p> <p>Format adaptation: asides, footnotes, graphs, visual aids, glossaries, parenthetical information, pretasks</p> <p>provide learners with models of pedagogic discourse</p> <p>replace technical vocabulary to semi technical vocabulary</p>
strategies identified	<p>T1B&G</p> <p><u>Changes in text typology: typeface</u></p> <p>1. paragraph to bullet points</p> <p>2. new terminologies are highlighted in bold and underlined in the English version. E.g. Blood flows along two pathways, or circuits, in the body (Figure 30-5). The pulmonary circuit carries oxygen-depleted (deplete = take something away) blood from the heart to the</p>

lungs and oxygen-rich blood back to the heart. The systemic circuit carries **oxygen-rich blood from the heart to the rest of the body and oxygen-depleted blood back to the heart.**

3. key information which often appear as test questions are highlighted in bold. e.g. a test question for this part of the text could be ‘List the four chambers of the heart and describe their functions’:

The heart is a **muscular pump** located between your lungs. The human heart has **four chambers** (Figure 30-6). The two **upper chambers**, which **receive blood** returning to the heart, are called **atria** (singular, *atrium*). The two **lower chambers** are called **ventricles**, which **pump blood out of the heart**. The **atria**, which pump blood a short distance into the ventricles, have fairly **thin walls**. **Ventricles have thicker muscular walls that enable them to pump blood throughout the body.**

4. Format adaptation: visual aids

A labelled diagram has been added in the English version to show the names of the internal parts of a heart

an animation was added to illustrate the functioning of heart

A youtube video ‘How a Normal Heart Pumps Blood’ is added

T2B&G

Changes in text typology: typeface

1. A text with diagrams about crustaceans. The main information is highlighted with bold font. The structure of the body is listed under bullet points.

Format adaptation: visual aids

1. pictures of each creatures have been added to the worksheet
2. A text that compares slugs and snails are chosen from Word choice are at CEFR... level. The style of the text is pedagogical and interactive ‘this is why you rarely notice the damage they do in the countryside.’ Simple sentences and some complex sentences with simple clause. Relative clause are widely used to define and or to give extra information as is typical in informative text. The teacher **added diagrams** to the text which illustrates the internal and external structure of a snail. This is quite helpful as the text mentions specific parts of a snail and their functions e.g. ‘...a nerve poison injected by a single, hypodermic like tooth at the end of radula...’. The pictures given in the original material only have unlabelled photos of a snail and a slug in their natural habitat.
3. A text that describes the body of bivalves. word choice are at CEFR ...level. sentences are quite complex with a wide range of devices used to formulate insertions which give extra information. Passive voice is widely used as it describes different stages of a process. Technical vocabulary abound even within one sentence. The teacher **added hand-drawn illustration** of the reproduction of bivalves at the margin on the right hand side of the text. The illustration is labelled then with short explanation of different stages. This illustration corresponds to the last paragraph of the text. Again this complements very well the text which would otherwise be very difficult to comprehend. With the illustration, the readability of the text largely improves; even though the illustration only shows one of two types of reproduction that three different families of bivalves conducts, the reader can then understand better how the other family reproduces.

Format adaptation: parenthetical information

1. Diagrams of metamorphosis of mosquito and dragonfly labelled in

	<p>Finnish. The teacher added descriptions of each stage in English, Finnish labels are direct translated whilst adding more detailed description (e.g. time of the month and length) in English using short phrases. Overall the English descriptions give a more informative illustration of the metamorphosis (e.g. have to wait till wings are dry, takes 1-2 days to get out of the nymph skin) and short description eases reader's understanding of the drawing (eggs hatches into nymph)</p> <p>T3H <u>More overt interactional structure: questions inserted</u></p> <ol style="list-style-type: none"> 1. added comprehension questions <p>T4H <u>Format adaptation: glossary</u></p> <ol style="list-style-type: none"> 1. Add synonyms to word list e.g. peasants=3rd estate. <p><u>Changes in text typology: typeface</u></p> <ol style="list-style-type: none"> 1. Underline main points for weaker students. Key information which often appear as test questions are underlined: important dates, key terms, places, names and events 2. Create bullet pointed notes for most of the topics: write in really simple sentence sometimes a clause so they can get an idea of the whole structure as often when a student is given a 2 page text, they don't actually get an overall picture of the content. Sequence: read text, do exercise, answer questions, write notes, teacher relates notes to the part of the text it came from, review. More detailed summary provided with subheadings and bullet points written in the format of both full sentences and notes 3. texts are divided into small sections in different shaped text frames. 7 grades enjoy reading this text format. <p><u>More overt interactional structure: questions inserted</u></p> <ol style="list-style-type: none"> 1. Create a set of questions at the end. The teacher writes her own follow up wh- questions typical of history subject. The website provides ready-made activities crossword puzzle & word search for the page on 'what was the French Revolution?' and 10 quiz questions for 'The causes of French Revolution'.
Mixed adaptation strategies	
Simplification+Elaboration	<p>T1B&G</p> <p>Reduction and restructure: (Adjust sentences sometimes)</p> <p>Original: 'The pacemaker is controlled by both the nervous system and the endocrine system. Two sets of opposing nerves control the pacemaker by speeding it up and by slowing it down. Hormones secreted into the blood also control the pacemaker. For example, the hormone epinephrine, also called adrenaline, increases heart rate when the body is under stress.'</p> <p>Adapted: 'Heart muscle generates its own contractions. The heart rate is controlled by both the nervous system and hormones (=endocrine system), such as adrenaline, which increases heart rate when the body is under stress. (Fight or flight)'</p>